

Dartmouth  
Health Children's



WELCOME to the

*Pediatric Integrative Medicine ECHO:  
Changing Health Care for Children*


## Series Learning Objectives

Participants will be able to

- Explain the importance of a health-based, integrative approach to care of the whole person and motivate patients to become active and informed partners in their care
- Articulate evidence and indications for use of diverse integrative, health-based therapies in patient care in different contexts, including: mind-body approaches, nutrition, movement and manual therapies, botanicals and supplements, acupuncture, and other integrative approaches
- Strategically and effectively implement health-based, integrative approaches into the care of patients to nurture wellness and address existing health conditions

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# Pediatric Integrative Medicine How do we Heal our children?

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# Disclosures

Medical Advisor Davinci Labs/FoodScience



# IM/CAM in Pediatrics

- ▶ Goals
  - ▶ What is IM/CAM
  - ▶ Prevalence/Epidemiology
  - ▶ Things that I get called about/Cases
  - ▶ IM “tools for your tool box” for all practitioners
  - ▶ Our primary concept: All patients have more wellness than disease. Promote disease, decrease illness.
  - ▶ Giving control back to the patient
  - ▶ Finding balance in medicine: Principle of Yin/Yang



# Thoughts



- ▶ Healing vs. curing
- ▶ Is there research?
- ▶ Cross over in modalities
- ▶ Not clearly toward the disease but more the experiences/life of the patient (sleep, wellness, anxiety etc)
- ▶ Many names, many tools, don't get frustrated
- ▶ Opening the mind
- ▶ You can't go back
- ▶ "this isn't complementary and alternative medicine, it is just good medicine"
- ▶ 3 BIG concepts: Inflammation, Upregulation, Neuroplasticity


# What is IM

- Broad Categories
  - Conventional Med
  - Nutrition/Diet
  - Exercise/Physical Activity
  - Whole systems (TCM, Ayurveda, Naturopathy, Homeopathy)
  - Botanical med
  - Energy Medicine (Reiki, Healing touch, Qi Gong etc)
  - Supplements
  - Spirituality
  - Manual Medicine (OMM, Chiropractic, Massage, PT, Zero balancing, reflexology etc)
  - Mind-Body Medicine (Hypnosis, Biofeedback, Guided imagery, Creative therapy etc)




# Who is using it and what are they using

- ▶ In the US, (1997) ~1/3 of all adults use CAM
- ▶ Visits to CAM providers
  - ▶ 1990:420 million, 1997:629 million (up by47%)
  - ▶ 1997 estimated 21.2 billion dollars ~12billion out of pocket
  - ▶ 2007 14 Billion spent out of pocket to treat pain, 33.9 total out of pocket for all issues (NIH)
  - ▶ 2015 40 Billion dollars spent on botanicals and supplements alone
- ▶ More recent estimates~40-62% adults using CAM (40% NIH)
  - ▶ Higher levels of education and economic status

- 
- ▶ In Children: ~12-30% of healthy children seen in outpt clinics use CAM (NIH, Kemper)
  - ▶ >50% of children with chronic, recurrent or incurable illness use CAM
  - ▶ ALMOST ALL STILL CONTINUE WITH WESTERN TREATMENTS!
  - ▶ Prior study in early 2000's, <20% pediatricians felt they had IM knowledge >70% wanted more info.
  - ▶ For specific conditions:
    - ▶ For Asthma: 33-89% pediatric patients using CAM to some degree.
    - ▶ For GI issues, studies with >50% of all patients using some form of CAM.

# Problems and the Future


- ▶ Zealots and the extremes
  - ▶ Ex: Vaccines, Chelation, Alternative labs, ?DAN . How do we find the balance?
  - ▶ Our own people creating a divide.
- ▶ Research:
  - ▶ Incorporating other scientific models into our Western scientific thoughts. Ex: TCM, Ayurveda, Homeopathy. Possibly more complexity than reduction model
  - ▶ Outcomes studies: Ex Ulcerative Colitis-Western vs Integrative GI, what are the outcomes
  - ▶ Acceptance in mainstream Journals
- ▶ Supplements/Herbs
  - ▶ Regulation, consistency, contamination, adulteration

- 
- Education:
    - Clearly needed given patient demands
    - Consistency, accuracy, availability
    - Payment
  - Licensing of practitioners
    - Commonly state regulated
    - Who do you trust
  - Pediatrics
    - Dosing
    - Safety
    - Research



# So What Is The (My) Goal?

- Create a true wellness based health system that incorporates all healing modalities
- How do we get there
  - Cultural shift
  - Education of health care providers (everyone in the system)
  - Education of students/residents/fellows
  - Deliverable to all regardless of pay: ex. Evaluation of supplements, community acupuncture, covered manual therapies etc
  - Sustainability/Marketability
  - Using local networks (vetting practices- costs/peds/licenses etc)

- 
- ▶ “Value in volume system”
    - ▶ Creating educational program to improve each visit
  - ▶ Throughout the whole health care system (inpatient, outpatient, radiology, ER etc). Can no longer be in silo
    - ▶ Ex: OMT in inpatient unit (NAS babies/Newborn/NICU, Acupuncutre inpatient for children, Pet therapy, Mind body treatments, music therapy etc)
  - ▶ Greening the hospital
  - ▶ Healing environments
  - ▶ Creating a health model for the nation-really doing it!
  - ▶ And MORE!

# Course Plan

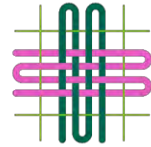
- ▶ Give the participants the tools to understand all the principles of Integrative care
- ▶ Give the participants deliverables to take back to their practice no matter where you work or what you do.
- ▶ Start with modalities (IE food, movement, motivational interviewing, TCM, botanical bootcamp etc) that will form the base to develop on.
- ▶ Followed by programs targeting specific for both primary care and subspecialties based on what each program has asked for.
- ▶ Lots of overlap!
- ▶ Cases each week can be anything that people are interested in so PRESENT ONE! 😊
- ▶ Very important: We are reaching across the whole system and need to know anyone or program that we can incorporate under our umbrella including community programs. Please speak up!! 😊
- ▶ In the end want to have essentially a practical, deliverable program that people feel trained and can bring the techniques throughout the DH system.

## Forty-Three

In ancient times, people lived holistic lives. They didn't overemphasize the intellect, but integrated mind, body, and spirit in all things. This allowed them to become masters of knowledge rather than victims of concepts. If a new invention appeared, they looked for the troubles it might cause as well as the shortcuts it offered. They valued old ways that had been proven effective, and they valued new ways if they could be proven effective. If you want to stop being confused, then emulate these ancient folk: join your body, mind, and spirit in all you do. Choose food, clothing, and shelter that accords with nature. Rely on your own body for transportation. Allow your work and your recreation to be one and the same. Do exercise that develops your whole being and not just your body. Listen to music that bridges the three spheres of your being. Choose leaders for their virtue rather than their wealth or power. Serve others and cultivate yourself simultaneously. Understand that true growth comes from meeting and solving the problems of life in a way that is harmonizing to yourself and to others. If you can follow these simple old ways, you will be continually renewed.

**Lao Tzu, Hua Hu Ching**





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**WELCOME** to the

*Pediatric Integrative Medicine ECHO:  
Changing Health Care for Children*

*Session 2, Motivational Interviewing, June 15 2023*

*Please let us know you are here: Type your name, email,  
organization into CHAT*

## Today's Program

- Brief housekeeping
- Didactic: Motivational Interviewing – Catherine Schuman
- Case presentation – Megan McMahon Martel
- Role Play – Catherine Schuman, Andy Wegman
- Summary
- Up Next



# Motivational Interviewing

## Helping People Improve their Diabetes Self-Care



Catherine Schuman, Ph.D.  
Family Medicine Residency  
Cheshire Medical Center

## Training Objectives

- **Understand the basics of MI**
- **Strengthen your ability to elicit change talk and commitment language**
- **Learn communication techniques that encourage medication/treatment adherence**

## Medication Adherence Facts

- **Medication nonadherence is prevalent: 3 out of 4 Americans report not taking medications as directed**
- **For every 100 prescriptions written, 50 to 70 make it to the pharmacy, and 48 to 66 are filled and leave the pharmacy. Of those in patients' possession, 25 to 30 are taken properly, and only 15 to 20 are refilled as prescribed (1)**
- **Adherence problems are more prevalent when regimens are time consuming, complicated, make the disease visible or offer no 'perceived' immediate benefits (2)**
- **Medication nonadherence results in a 33% to 69% increase in medication-related hospitalizations, 89,000 to 125,000 premature medicine-related deaths, and an additional \$2,000 per patient in medical costs and medical provider visits. All are preventable; however, until prevention is achieved, direct and indirect health care costs will increase annually by \$300 billion (3,4)**

## The Facts

- **40-80% medical information given forgotten immediately; half retained is incorrect**
- **Physicians thought 89% of patients understood medication side effects, only 57% of patients understood**

Kessels, R. P. (2003). Patients' memory for medical information. *Journal of Social Medicine*, 96(5), 219-222.  
Training to Advance Physicians' Communication Skills. (n. d). Retrieved from AHRQ Website.

## MI and Good Communication

- **Results of a meta-analysis focusing on communicating with patients about medication adherence found a 19% increase in nonadherence among patients whose health care provider communicated **poorly** (5)**

## Teach-Back Method

- **Method to confirm patients understand their medication/treatment:**
  - “Tell me why you need this medication”
  - “Tell me how you take this medication”
- **Teach Back not a test of patients’ knowledge**
- **Is a test of how well we explain something**

Kessels, R. P. (2003). Patients' memory for medical information. *Journal of Social Medicine*, 96(5), 219-222.



# Why Don't People Do What We Tell Them to Do?

- **They don't understand** – poor provider communication or low health literacy
- **Reactance** – When freedoms drift away people reach out to hold onto them tightly
- **Ambivalence** – Our internal committee
- **Costs a lot to change** - Even those at goal struggle constantly
- **Depression, substance use, mental health or cognitive issues**
- **Finances** – **Monitoring supplies and medication are not cheap**
- **Dependence** – don't want to be addicted to something
- **What other concerns have you heard?**

## Do We Sometimes Inhibit Change?

- **Discord (arguing for change)**
- **The Righting Reflex (instilling change)**
  - Working persuasively without permission
  - Working harder than the patient, in an attempt to “install change”

## The **RIGHTING REFLEX** often fails because:

- **STATUS QUO** is perceived as easier, change is hard work
- **AMBIVALENCE** is unresolved and the patient has concerns about success
- There is a cost to making changes

**Remember: IN CONVERSATIONS WITH PATIENTS THE MOST INFLUENTIAL AND PERSUASIVE VOICE IS WITHIN THE PERSON YOU'RE SEEING**

## MI is a style of practice:

**“MI is a collaborative, goal-oriented style of communication with particular attention to the language of change. It is designed to strengthen personal motivation for and commitment to a specific goal by eliciting and exploring the person’s own reasons for change within an atmosphere of acceptance and compassion.”**

## Empathy

- **MI begins with open-ended questions, and ideally come from a place of genuine interest in the patient's situation**
- **Goal is to normalize talking about why someone isn't taking their meds so that they feel comfortable opening up to you about this**
  - **“I wanted to talk to you today about your DM meds and how you feel about taking them. I've worked with a lot of patients who struggle with taking meds every day, and I know it can be a really difficult thing to do. Some of my patients struggle with remembering to take the pills/injections, or they don't like how it feels to have to take something everyday. What's it like for you?”**

## Developing Discrepancy

- Goal is to increase the reasons for making a **change from the patient's point of view**
- Ideally, the question & answer exchange will answer: How does **not** taking your meds as prescribed fit into your greater value system?
- Accomplished by asking specific types of questions, and by using reflective listening

## Developing Discrepancy

- **What types of questions should I be asking?**
  - **Open ended**
  - **Ask for pros/cons of not taking meds**
  - **Ask for elaboration and/or examples**
  - **What happens if things continue as they are?**
  - **What would be different if you took your meds?**
  - **Explicitly side with the negative aspects of making a change**



## Sail along with Sustain Talk

- **Come from a place that understands that resistance to change is completely normal, and not rooted in pathology or denial**
- **Based on the principle that efforts to push someone to change often result in an equal or greater push back to not make that same change**

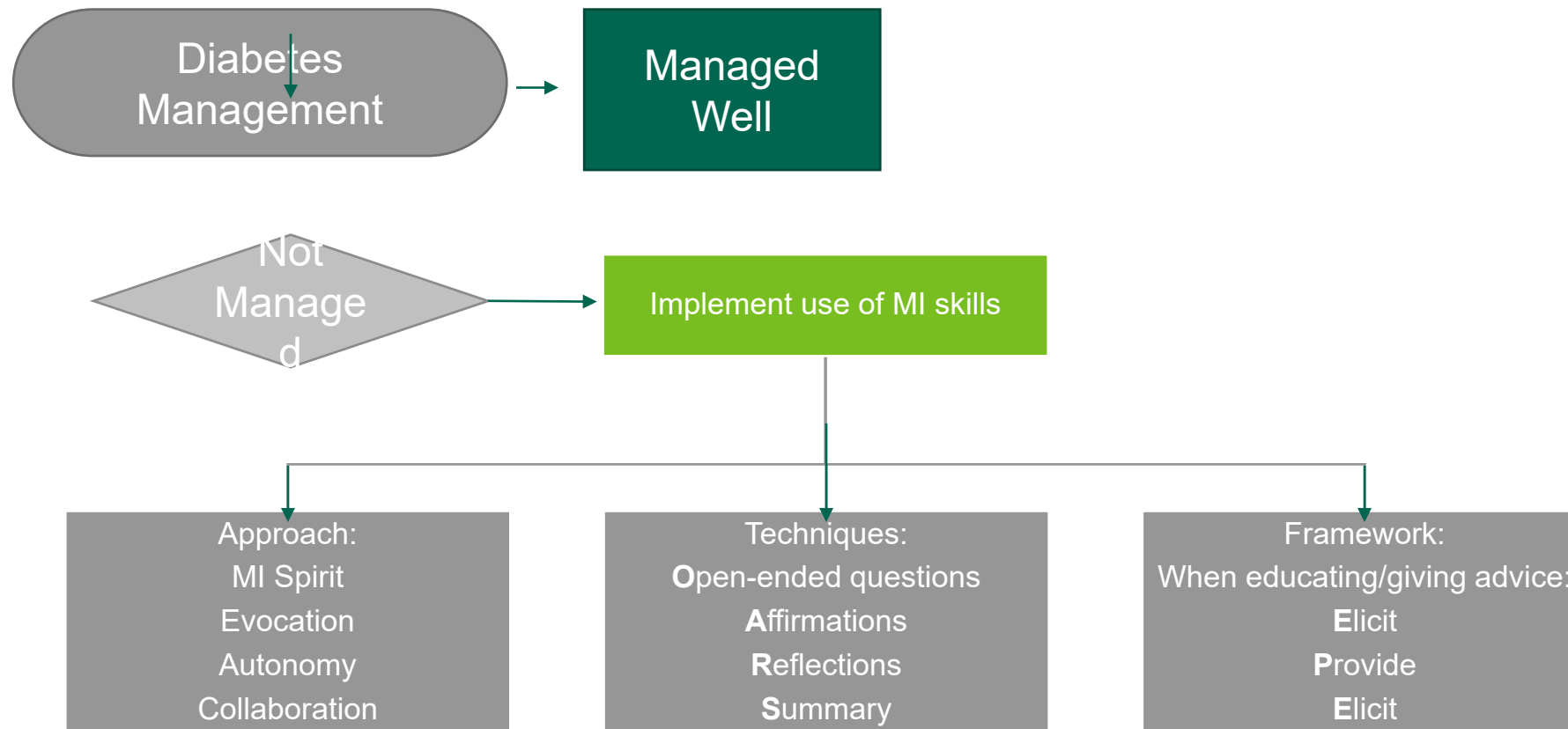
## Supporting Self-Efficacy

- **Patients can feel that making change is not possible for them, either because they have failed in the past, or because they don't see another way to do things**
- **By highlighting genuine strengths, MI can rekindle interest in making an attempt and change, and can allow the patient to think differently about themselves and the likelihood of their success**

## MI

- **MI works best when you hold back on telling the patient why he/she needs to change, no matter how difficult this may be to do**
- **The patient needs to develop his/her own reasons & motivations for changing**
- **MI is a process, and many patients may be very reluctant to consider any change at all - This does not mean that your MI techniques are not worth continuing**
- **MI does not have to take a huge amount of time**

## Where MI Fits In



## Motivational Interviewing

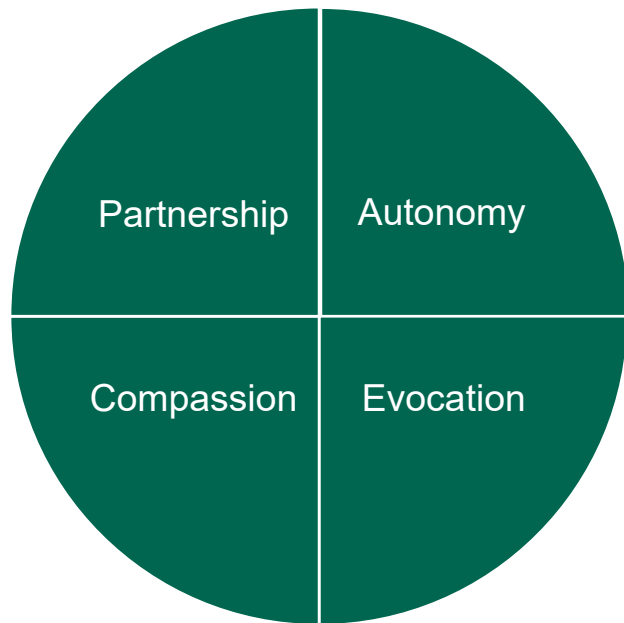
**Motivational interviewing is a client centered, guiding communication style for enhancing a person's own motivation for change or behavioral activation.**

*“People don't care how much you know until they know how much you care.”*  
- John Hanley

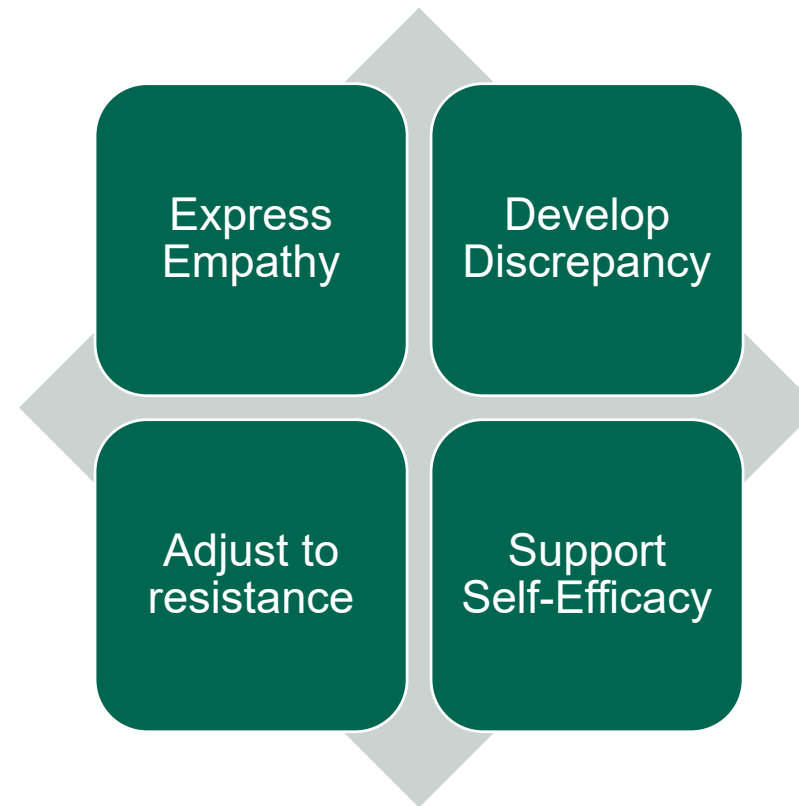
## Listening in MI

- **Change Talk** : “I want to lose weight.”
- **Activated Change Talk – or Commitment Language**: “I’m thinking about going to a gym so that I can get some activity. That might help me lose weight.”
- **Sustain Talk**: “I really enjoy eating. I’m not going to try again to lose weight. I’ve never been able to keep my lost wait off.”

# MI SPIRIT



## Principles



## Core Skills: OARS





## Affirmations

- **You see the benefit of nighttime blood glucose testing. It helps you avoid lows at night**
- **You worked hard to get into the habit of regular physical activity - You enjoy long walks and you've lost weight since starting it**

## Reflective Listening

- **Ready**
  - Reflect back all the reasons (pros) the Patient has stated
- **Unsure**
  - Reflect back what you hear (stating the cons before the pros so that you end on the positive)
  - You have not taken either side of the internal argument but reflected back both sides
  - The patient sees his/her ambivalence and is not pressured to defend his/her stance.
- **Not Ready**
  - Reflect back that you hear the parent's concerns and affirm that their concerns make sense in the context of how they are thinking

## Reflections: Statements that evoke the patient's ideas or perspectives

- Listen for change talk and use it in your reflections
- Listen to what is said rather than thinking about your next question
- What feelings does the person wind around the words?
- Levels of reflection:
  - Simple Reflection – Rephrase or repeat
  - Complex reflection – Paraphrase or add more than one idea
    - Can amplify by adding feeling/emotion

## Types of Reflective Listening

**Simple reflections** are short statements that reflect the content or emotion of what the person said. You can choose which element or aspect to reflect back

- If patient said: I know you keep saying it is important to measure my blood sugar levels, but I'm just not sure it's necessary...
- A reflection is: Even though you have been encouraged to monitor your blood sugar levels, you're still unsure if it's needed

**Complex reflections** go beyond what was said and offer a new perspective There are several types of complex reflections:

**Amplified** – the person's statement is taken to the extreme

**Double-sided** – reflects back the ambivalence or pros and cons

**Guessing the unexpressed** – guess at what is underlying the statement

**Affective (feelings)** – reflect back the feelings or emotions expressed

**Continuing the paragraph** – the listener finishes the statement

**Metaphor** – uses a metaphor to restate the person's statement

## Sustain Talk - Resistance

- **Psychological Reactance (J.W. Brehm) – a motivational reaction that occurs when a person feels that their sense of freedom or personal choice is being threatened or the range of alternatives is being limited**

## Sustain Talk - Resistance

### Common Cues to Resistance or Sustain Talk

- Arguing
- Interrupting
- Ignoring/not paying attention
- Crossing arms
- Being dismissive (“whatever!”)

### MI-Adherent Response

- Slow down
- Come along side and try to understand
- Reflect what you hear
- Support autonomy – “I can’t make you monitor your blood sugar levels, and I wouldn’t want to. What I can do if you give me permission is share my view and provide any information that will be helpful to your decision. In the end, this is your decision.”

## Information and Advice: 3 Kinds of Permission

- The person asks you for advice or info “Which option is best for you?”
- You ask permission to give advice or info: “Would it be helpful for me to suggest some choices?”
- You qualify the advice or info to emphasize autonomy “I can provide you with some ideas and you could decide what would work best for you.”

## Offering Info or Advice When Risks are Great or When Approaching Sensitive Topics

- **Ask permission, “May I speak with you about something important, something that could make you quite ill?”**
- **Express your concerns: “It’s important for you to know that skipping some of your insulin every day causes your blood glucose levels become uncontrolled. You could develop DKA and end up in the hospital. Some people with DKA die.**
- **Evoke further exploration of the topic: “I am interested in what you think about this.”**



## Elicit-Provide-Elicit

### Elicit

- Ask parent what they already know or would like to know more about
- Ask permission to offer information

### Provide

- Give information in a neutral, nonjudgmental fashion
- Avoid “I” and “You”

### Elicit

- Gather parent's understanding of the feedback provided
- Ask what else the patient would like to know
- Ask what they make of the information

# E-P-E MI Scripting

**Elicit:**  
Ask what the patient knows or would like to know. Or ask if it's okay if you offer them information

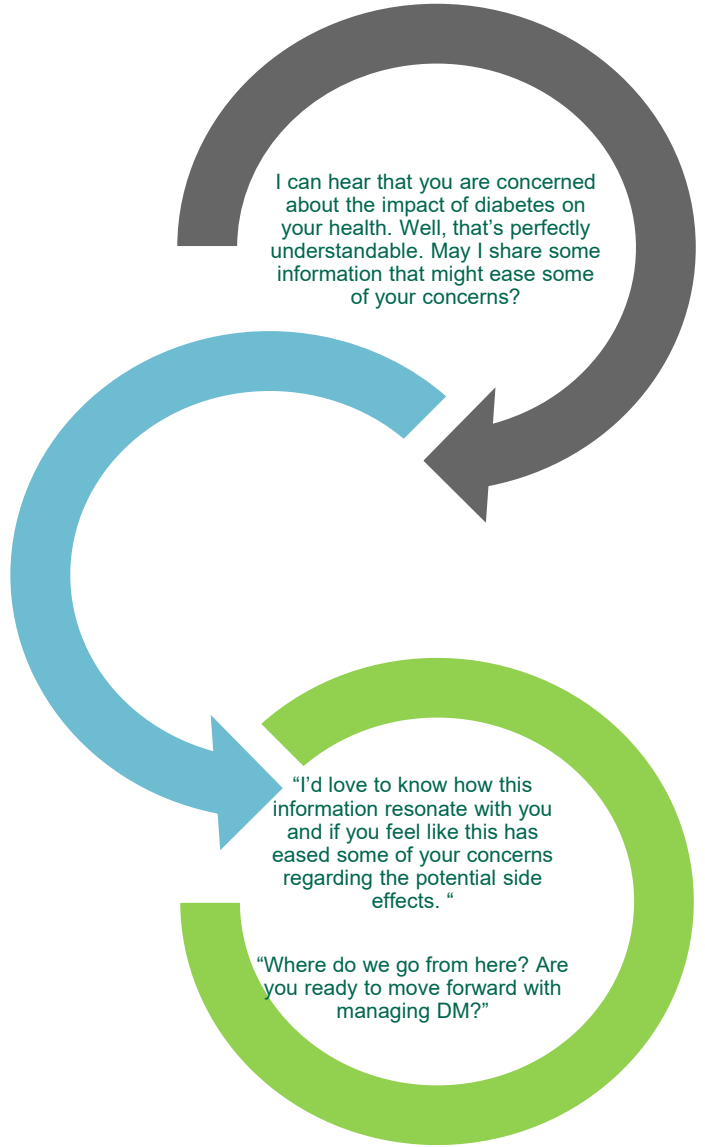
- "what do you already know about the effects of diabetes on your health?"
- "Do you mind if I express my concerns about not treating diabetes?"
- "Would you be open to me sharing some information about the behavioral changes and medication for diabetes management with you?"
- "Would it be ok if I tell you what we know?"
- "Would you be open to learning more?"

**Provide:**  
Give information in the neutral, nonjudgmental fashion. Avoid "I" and "you."

- "Research suggest..."
- "Studies have shown..."
- "Others have found benefit from ..."
- "Folks have found..."
- "What we know is..."

**Elicit:**  
Gather what the patient's interpretation was, what else they would like to know, or what they make of the information.

- "How does this impact your decision?"
- "What does this mean to you?"
- "How can I help?"
- "Where does this leave you?"
- "What else would be helpful for you to know that would help you make your decision?"
- "Where do we go from here?"



# Role Play

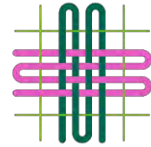


## Resources

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## Additional Resources

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6. Miller WR, Rollnick S: Ten things that motivational interviewing is not. Behavioral and Cognitive Psychotherapy 37: 129-140, 2009.
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WELCOME to the

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*Session 3, Nutrition/Food in our Health, July 20 2023*

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organization into CHAT*

## Today's Program

- Brief housekeeping
- Didactic: Nutrition/Food in our Health
  - Filomena Kersey, RDN, LD – Clinical Dietician
  - Kiah Williams, RDN, LD – Clinical Dietician
- Case Presentation
- Case Discussion
- Summary
- Up Next



# Food For Health and The Science Behind It

# Key Learning Objectives

- What uniquely qualifies a dietitian to help clients
- Nutrients to reduce inflammation
- Foods/dietary patterns that provide these nutrients
- Prevention and Intervention

## A Dietitian's Role

- Our unique training allows us to translate the science of nutritional biochemistry into practical application, meeting families where they are in that moment to educate and coach families in the implementation of nutritious food choices for them.
- The most challenging piece to this work is breaking through the misconception that the dietitian is there to judge choices.
- The reward is working with the patient and family –seeing them set and achieve their goals toward better health.



## Questions we hope to answer:

- What are the best food choices?
- How do families even start, particularly when there are limits to both time and money?
- What intervention(s) is effective?
- How does a dietitian help with this dilemma?
- What resources are available?

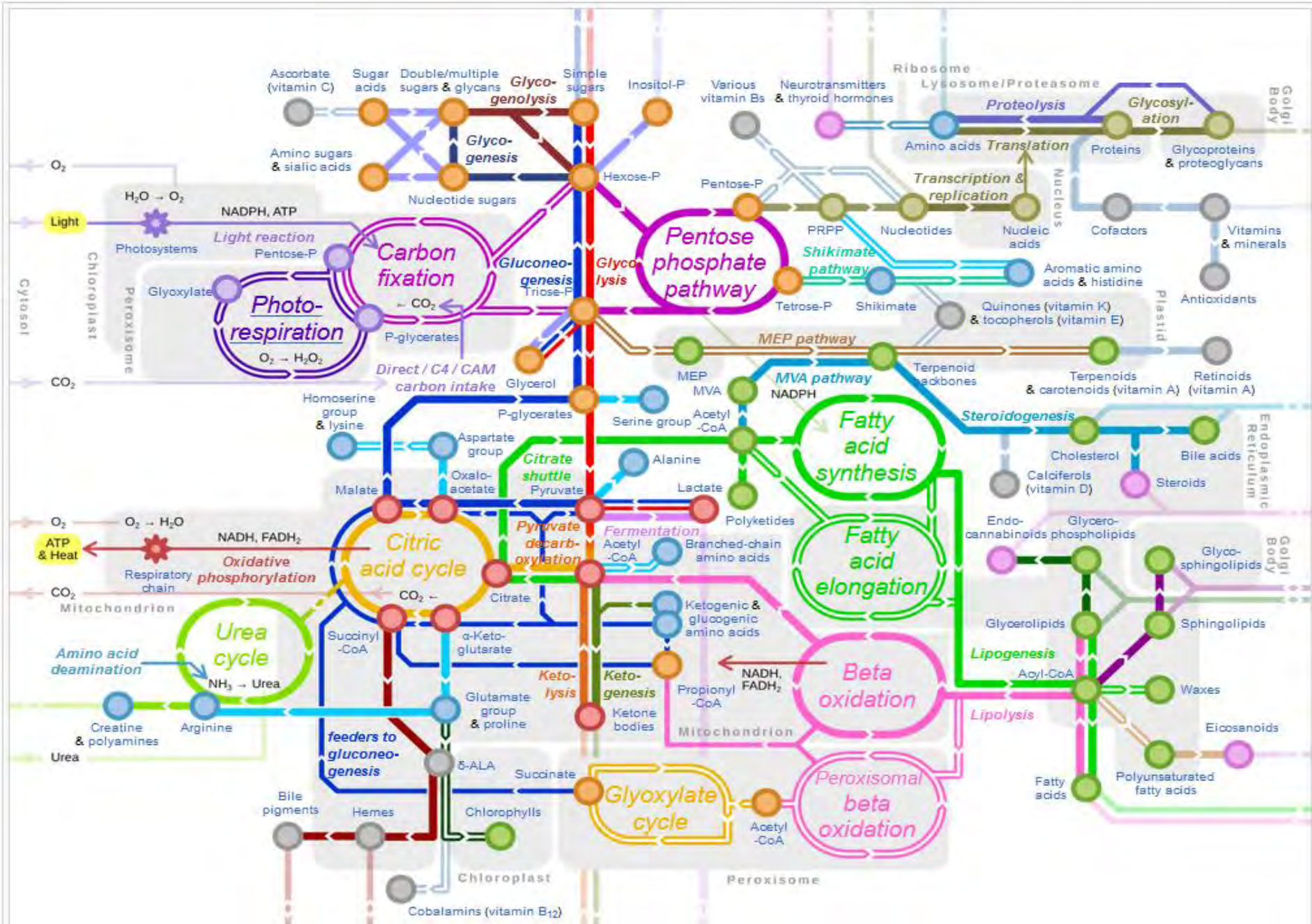
# Integrative & Functional Medical Nutrition Therapy

Includes personalized nutrition care which considers all aspects of the individual:

- Food, Lifestyle, and Environment
- Nutrition Physical Signs & Symptoms
- Biomarkers/genetics
- Metabolic Pathways and Systems
- Toxins
- Pathogens
- Allergens & Intolerances
- Stress

We are what we Eat!

The nutrients from foods are involved in all of these pathways.



## Nutrients Involved in the metabolism and energy production

Glutathione	Glutamine	Histidine	Proline
Isoleucine	Methionine	Tyrosine	Asparagine
Magnesium	Vitamin D3	Zinc	L-Carnitine
Vitamin B1	Vitamin B2	Vitamin B3 / NAD	Vitamin B5
Vitamin B6	Vitamin B12	Folic Acid	Water
Vitamin C	Iron	Selenium	Alpha Lipoic Acid

# Improving Nutrition is Important for the following conditions and more:

- ADHD
- Autism
- Cancer
- Cardiovascular disease
- Diabetes
- Inflammatory Bowel Disease
- Irritable Bowel Disease
- Juvenile Idiopathic Arthritis
- NAFLD



## It Is Not Just About the Vitamins

### Include more:

- High fiber foods
- Unsaturated fats
- Phytosterols
- Flavonoids
- Minerals/trace elements/electrolytes
- Exercise/Activity



## It Is Not Just About the Vitamins

### Include Less:

- Ultra processed foods
- Excess salt
- Added sugars
- Saturated fats
- Trans fats
- Sedentary lifestyle



## Nutrient and Medication Interactions

- Proton pump inhibitors: vitamin B12, C, folate, zinc and other minerals
- Tylenol: glutathione
- NSAIDS: folate
- Ritalin, Adderall, caffeine: can lead to low magnesium levels
- Metformin: vitamin B12
- Methotrexate: folate (may not want to supplement during treatment of certain patient groups)
- Oral contraceptives: folate, vitamin B12, B6, and C, and Zinc
- Smoking: Vitamin C, B-carotene, selenium and zinc

## Food Sources of Affected Nutrients

- Folate – edamame, legumes, leafy greens, wheat germ, beets, fortified grains
- Magnesium - legumes, edamame, leafy greens, nuts, pumpkin seeds, wheat germ, bran
- Selenium – brazil nuts, meat, fish, eggs, dairy, spinach, cashews
- Vitamin A – apricots, carrots, cantaloupe, broccoli, milk, spinach, sweet potato
- Vitamin B6 – legumes, fish, potatoes, meats, dairy
- Vitamin B12 – meat, poultry, clams, eggs, milk, nutritional yeast
- Vitamin C – broccoli, brussels sprouts, cabbage, strawberries, potatoes, tomatoes
- Zinc – legumes, eggs, meats, fish, peanuts, wheat germ

# New American Plate



## Dietary Guidelines for Americans 2020-2025

### Healthy Mediterranean-Style Dietary Pattern for Ages 2 and Older, With Daily or Weekly Amounts From Food Groups, Subgroups, and Components

CALORIE LEVEL OF PATTERN <sup>a</sup>	1,000	1,200	1,400	1,600	1,800	2,000	2,200	2,400	2,600	2,800	3,000	3,200
FOOD GROUP OR SUBGROUP <sup>b</sup>	Daily Amount <sup>c</sup> of Food From Each Group (Vegetable and protein foods subgroup amounts are per week.)											
Vegetables (cup eq/day)	1	1 ½	1 ½	2	2 ½	2 ½	3	3	3 ½	3 ½	4	4
	Vegetable Subgroups in Weekly Amounts											
Dark-Green Vegetables (cup eq/wk)	½	1	1	1 ½	1 ½	1 ½	2	2	2 ½	2 ½	2 ½	2 ½
Red and Orange Vegetables (cup eq/wk)	2 ½	3	3	4	5 ½	5 ½	6	6	7	7	7 ½	7 ½
Beans, Peas, Lentils (cup eq/wk)	½	½	½	1	1 ½	1 ½	2	2	2 ½	2 ½	3	3
Starchy Vegetables (cup eq/wk)	2	3 ½	3 ½	4	5	5	6	6	7	7	8	8
Other Vegetables (cup eq/wk)	1 ½	2 ½	2 ½	3 ½	4	4	5	5	5 ½	5 ½	7	7
Fruits (cup eq/day)	1	1	1 ½	2	2	2 ½	2 ½	2 ½	2 ½	3	3	3
Grains (ounce eq/day)	3	4	5	5	6	6	7	8	9	10	10	10
Whole Grains (ounce eq/day) <sup>d</sup>	1 ½	2	2 ½	3	3	3	3 ½	4	4 ½	5	5	5
Refined Grains (ounce eq/day)	1 ½	2	2 ½	2	3	3	3 ½	4	4 ½	5	5	5

## Dietary Guidelines for Americans 2020-2025

**Healthy Mediterranean-Style Dietary Pattern for Ages 2 and Older, With Daily or Weekly Amounts From Food Groups, Subgroups, and Components**

CALORIE LEVEL OF PATTERN <sup>a</sup>	1,000	1,200	1,400	1,600	1,800	2,000	2,200	2,400	2,600	2,800	3,000	3,200
<b>FOOD GROUP OR SUBGROUP<sup>b</sup></b>	<b>Daily Amount<sup>c</sup> of Food From Each Group</b> (Vegetable and protein foods subgroup amounts are per week.)											
Dairy (cup eq/day) <sup>d</sup>	2	2 ½	2 ½	2	2	2	2	2 ½	2 ½	2 ½	2 ½	2 ½
Protein Foods (ounce eq/day)	2	3	4	5 ½	6	6 ½	7	7 ½	7 ½	8	8	8
	<b>Protein Foods Subgroups in Weekly Amounts</b>											
Meats, Poultry, Eggs (ounce eq/wk)	10	14	19	23	23	26	28	31	31	33	33	33
Seafood (ounce eq/wk) <sup>e</sup>	3	4	6	11	15	15	16	16	17	17	17	17
Nuts, Seeds, Soy Products (ounce eq/wk)	2	2	3	4	4	5	5	5	5	6	6	6
Oils (grams/day)	15	17	17	22	24	27	29	31	34	36	44	51
Limit on Calories for Other Uses (kcal/day) <sup>f</sup>	130	80	90	120	140	240	250	280	300	330	400	540
Limit on Calories for Other Uses (%/day)	13%	7%	6%	8%	8%	12%	11%	12%	12%	12%	13%	17%

## DASH Eating Plan

**The Benefits:** Lowers blood pressure & LDL "bad" cholesterol.



**Eat This**



**Limit This**

Vegetables	Fatty meats
Fruits	
Whole grains	Full-fat dairy
Fat-free or low-fat dairy	
Fish	Sugar sweetened beverages
Poultry	
Beans	Sweets
Nuts & seeds	
Vegetable oils	Sodium intake

[www.nhlbi.nih.gov/DASH](http://www.nhlbi.nih.gov/DASH)



NIH

National Heart, Lung, and Blood Institute



**Food Group**

**Daily Servings**

Grains	6-8
Meats, poultry, and fish	6 or less
Vegetables	4-5
Fruit	4-5
Low-fat or fat-free dairy products	2-3
Fats and oils	2-3
Sodium	2,300 mg*
<b>Weekly Servings</b>	
Nuts, seeds, dry beans, and peas	4-5
Sweets	5 or less













## Added Sugars

- Some foods have sugar naturally—like fruits, vegetables, and milk. The sugars in these foods are not added sugars.
- Added sugars include: granulated/powdered sugar, high fructose corn syrup, molasses, cane sugar, corn sweetener, raw sugar, syrups (ex. maple), honey, fruit juice concentrates
- There is about 4.2 grams sugar in 1 teaspoon granulated sugar
- Goals:
  - Less than 2 years of age avoid added sugars
  - Preteens and younger: aim for less than 25 to 30 grams daily
  - Adolescents and adults: 25 to 35 grams daily (10% or less of total calories)



# Sugar in Common Drinks

Drink (12-ounce serving)	Teaspoons of Sugar	Calories
Bottled Water	0 teaspoons	0
Diet Cola	0 teaspoons	0
Sugar-Free Drink Mix	0 teaspoons	0
Sugar-Free Lemonade	0 teaspoons	0
Unsweetened Tea	0 teaspoons	0
Sports Drink	2 teaspoons 	75
Lemonade	6¼ teaspoons 	105
Orange Juice	7½ teaspoons 	160
Sweet Tea	8½ teaspoons 	120
Powdered Drink Mix (with sugar)	9 teaspoons 	145
Cola	10¼ teaspoons 	150
Fruit Punch	11½ teaspoons 	195
Root Beer	11½ teaspoons 	170
Grape Juice	12 teaspoons 	200
Orange Soda	13 teaspoons 	210

## Cola Label where to find the added sugar content

<b>Nutrition Facts</b>	
1 serving per container	
<b>Serving size</b>	<b>1 Bottle</b>
<b>Amount per serving</b>	
<b>Calories</b>	<b>240</b>
<b>% Daily Value*</b>	
<b>Total Fat</b> 0g	<b>0%</b>
<b>Sodium</b> 75mg	<b>3%</b>
<b>Total Carbohydrate</b> 65g	<b>24%</b>
Total Sugars 65g	
Includes 65g Added Sugars	<b>130%</b>
<b>Protein</b> 0g	
<small>* Not a significant source of saturated fat, trans fat, cholesterol, dietary fiber, vitamin D, calcium, iron and potassium.</small>	

### INGREDIENTS

CARBONATED WATER, HIGH FRUCTOSE CORN SYRUP, CAMEL COLOR, PHOSPHORIC ACID, NATURAL FLAVORS, CAFFEINE.

Caffeine Content: 57 mg/20 fl oz

# Ketchup:

With Sugar added:

Without Sugar Added:

**Nutrition Facts**

About 23 servings per container

**Serving size 1 Tbsp (17g)**

**Calories 20** per serving

Amount/serving	% DV	Amount/serving	% DV
Total Fat 0g	0%	Total Carb. 5g	2%
Sat. Fat 0g	0%	Fiber 0g	0%
Trans Fat 0g		Total Sugars 4g	
Cholest. 0mg	0%	Incl. 4g Added Sugars	7%
Sodium 190mg	8%	Protein 0g	
Vit. D 0% • Calcium 0% • Iron 0% • Potas. 0%			

**INGREDIENTS:** ORGANIC TOMATO CONCENTRATE FROM RED RIPE ORGANIC TOMATOES, ORGANIC DISTILLED VINEGAR, ORGANIC SUGAR, SALT, ORGANIC ONION POWDER, ORGANIC SPICE, NATURAL FLAVORING.

**Nutrition Facts**

About 52 servings per container

**Serving size 1 Tbsp (16g)**

**Calories 10** per serving

Amount/serving	% DV	Amount/serving	% DV
Total Fat 0g	0%	Total Carb. 1g	0%
Sat. Fat 0g	0%	Fiber 0g	0%
Trans Fat 0g		Total Sugars <1g	
Cholest. 0mg	0%	Incl. 0g Added Sugars	0%
Sodium 190mg	8%	Protein 0g	
Vit. D 0% • Calcium 0% • Iron 0% • Potas. 0%			

**INGREDIENTS:** TOMATO CONCENTRATE FROM RED RIPE TOMATOES, DISTILLED WHITE VINEGAR, SALT, NATURAL FLAVORING, ONION POWDER, SUCRALOSE\*, SPICE.  
\*NOT NORMALLY FOUND IN KETCHUP

30 Years ago

Present

- Small bagel has  
5.8 grams added sugar

- Large bagel has  
~11 grams added sugar



**140 calories**  
**3-inch diameter**



**350 calories**  
**6-inch diameter**

**Calorie Difference: 210 calories**

30 Years ago

Present

- Small has about 7 grams added sugar
- Large has about 13 grams added sugar



**333 calories**



**590 calories**

**Calorie Difference: 257 calories**

- Small has about  
~7 grams added sugar
- Large has about  
~14 grams added sugar

[www.nhlbi.nih.gov](http://www.nhlbi.nih.gov)

30 Years ago



**390 calories**  
**1 ½ cups**

Present



**790 calories**  
**3 ½ cups**

**Calorie Difference: 400 calories**

## Summary

- Dietitians use motivational interviewing techniques to help patients find 1-2 goals to work towards a healthier diet and lifestyle
- Include more: physical activity and foods with fiber, unsaturated fats, phytosterols, flavonoids, and minerals
- Include less: ultra processed foods, excess salt, added sugar, alcohol, saturated fats, and trans fats
- Following a healthy eating pattern such as Mediterranean style eating or the DASH diet can lead to better health outcomes



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# *WELCOME to the*

## Pediatric Integrative Medicine ECHO: Changing Health Care for Children

*Session 4, August 17, 2023*

### Today's Program:

- Brief housekeeping
- Didactic: Movement in Our Health  
– Michele Guerra
- Case Presentation: Erik Shessler
- Case Discussion
- Summary
- Up Next

### Notes:

- Enter name, organization into chat
- Raise virtual hand or enter comments in chat at any time. We will call on you when it works. Please mute otherwise.
- To protect individual privacy, please use non-identifying information when discussing cases.
- We will be recording the didactic part of these sessions. *Participating in these session is understood as consent to be recorded. Thank you!*
- Closed Captioning will be enabled during sessions
- [Submit cases](#)



# Movement and our children's health

*Michele Guerra*

*(Former) Employee Wellness Manger, Dartmouth Health CGP*

# Learning objectives

- Review the benefits of physical activity for children and adolescents
- *Understand the public health physical activity guidelines for children and adolescents*
- Know where youth stand in relation to the guidelines
- *Explore tactics to use during office visits to motivate children and their parents to be more active*
- Comprehend the power of parents in helping children & teens be more active
- *Tap into some behavior change theories and techniques to enhance conversations with patients and their parents.*

# Benefits of PA in youth

## Improved cognition

- performance on academic achievement tests,
  - executive function,
    - processing
    - speed,
    - memory

Reduced stress

Enhanced sleep

Improved mood

Reduced risk of depression  
& depressed mood

### Health Benefits of Physical Activity FOR CHILDREN

- Academic Performance**  
Improves attention and memory
- Brain Health**  
Reduces risk of depression
- Heart and Lung Health**  
Improves blood pressure and aerobic fitness
- Long-term Health**  
Reduces risk of several chronic diseases, including type 2 diabetes and obesity
- Healthy Weight**  
Helps regulate body weight and reduce body fat
- Bone Strength**  
Strengthens bones
- Cardiometabolic Health**  
Helps maintain normal blood sugar levels
- Muscular Fitness**  
Builds strong muscles and endurance

Source: Physical Activity Guidelines for Americans, 2nd edition  
To learn more, visit: <https://www.cdc.gov/physicalactivity/basics/adults/health-benefits-of-physical-activity-for-children.html>

October 2021

# PA guidelines for children and teens

## Ages 3 - 5

- Be active through the day
- Caregivers encourage active play whenever possible



## Ages 6 - 17

- Overall – 60 minutes per day
- Include
  - Aerobic
  - Muscle Strengthening
  - Bone strengthening

# Where are we at?

<u>Adolescents Goal</u>	<u>Adolescents Progress</u>	<u>Children Goal</u>	<u>Children Progress</u>
Increase proportion who do enough <b>muscle strengthening</b> activity	<b>Little or no detectable change</b>	Increase proportion (ages 2 – 5) who get no more than 1 hour of daily screen time	<b>Getting worse</b>
Increase proportion who do enough <b>aerobic</b> activity	<b>Getting worse</b>	Increase proportion who do enough Aerobic activity	<b>Getting worse</b>
Increase proportion who do enough <b>aerobic and muscle strengthening</b> activity	<b>Getting worse</b>	Increase proportion of <b>children and adolescents</b> who <b>play sports</b>	<b>Getting worse</b>
<i>Healthy People 2030</i>	<a href="https://health.gov/healthypeople/objectives-and-data/browse-objectives/physical-activity">https://health.gov/healthypeople/objectives-and-data/browse-objectives/physical-activity</a>		



## Keep in mind...



- Activity can be moderate
  - 5 – 6 on intensity scale of 1 – 10
  - Walk to school with friends – moderate
  - Run while playing tag or other active games - vigorous

## Keep in Mind ...

- Activity can be accumulated
  - Short bouts throughout the day can be very effective



# What you can do during a visit

Assess current levels of PA,  
interest level, etc.

Educate/ empower patients  
to increase PA

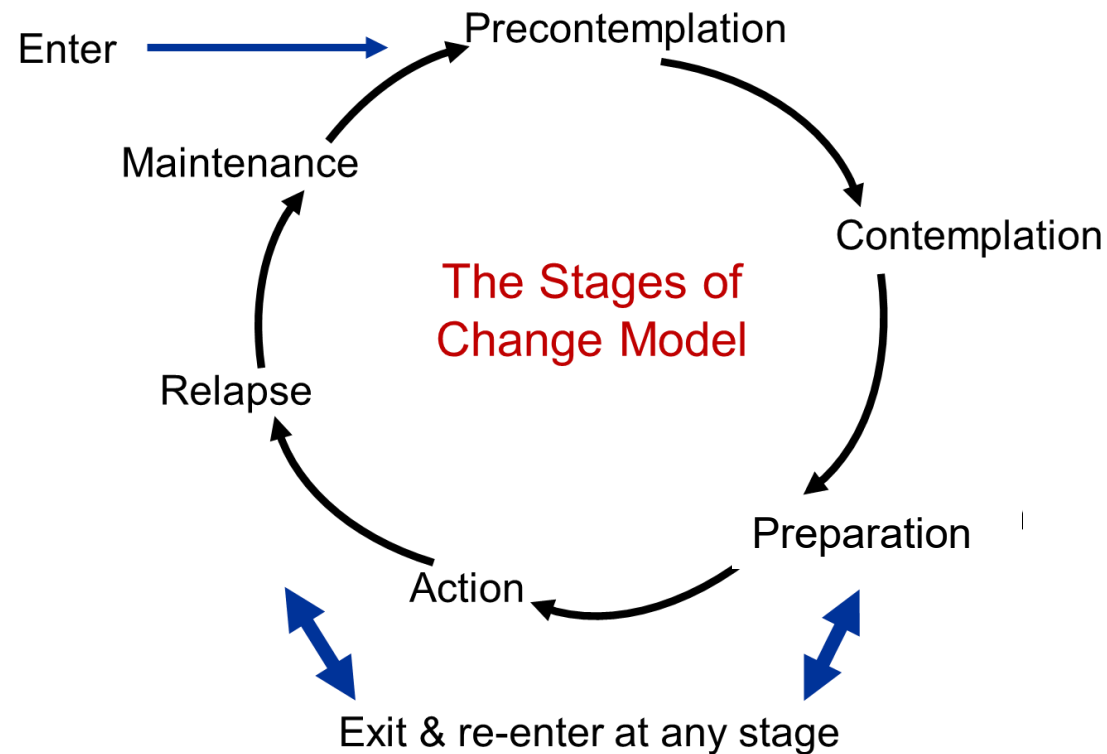
Encourage/ empower  
parents to support PA



# Assess

- Current level of PA
  - (define broadly)
- Lifestyle
- Barriers
- Likes & dislikes
- Overall attitude toward PA
- Stage of change related to PA
- Confidence to be more active

# Match approach to readiness to change



## STAGES OF READINESS FOR CHANGE



Prochaska, J.O., Velicer, W.1997. The transtheoretical model of health behavior change. September 1997. American Journal of Health Promotion. 12(1). 38 - 48

# Assess readiness– two questions

1. “How **important** is it to you to make this change, on a scale of 0 to 10 with 10 being extremely important?”
2. “How **confident** are you that you can make this change, on a scale of 0 to 10 with 10 being extremely confident?”



# Educating/empowering – it's a DIALOGUE, not a lecture

## COLLABORATIVE CARE: PROMOTING SELF-MANAGEMENT

	Traditional	Collaborative
Interactions	Based on the caregiver's agenda	Based on a shared agenda
Behavior change	Comes from knowledge	Comes from self-efficacy plus knowledge
Goal	Compliance	Self-efficacy
Decisions	Made by the caregiver	Made by the patient and caregiver in partnership

# Educate/empower patients

- Meaningful benefits
- Redefine what PA is
- Enjoyable
- Realistic
- Ability & confidence
- Barriers
- <https://healthy.kaiserpermanente.org/health-wellness/health-encyclopedia/he.abp8455#>





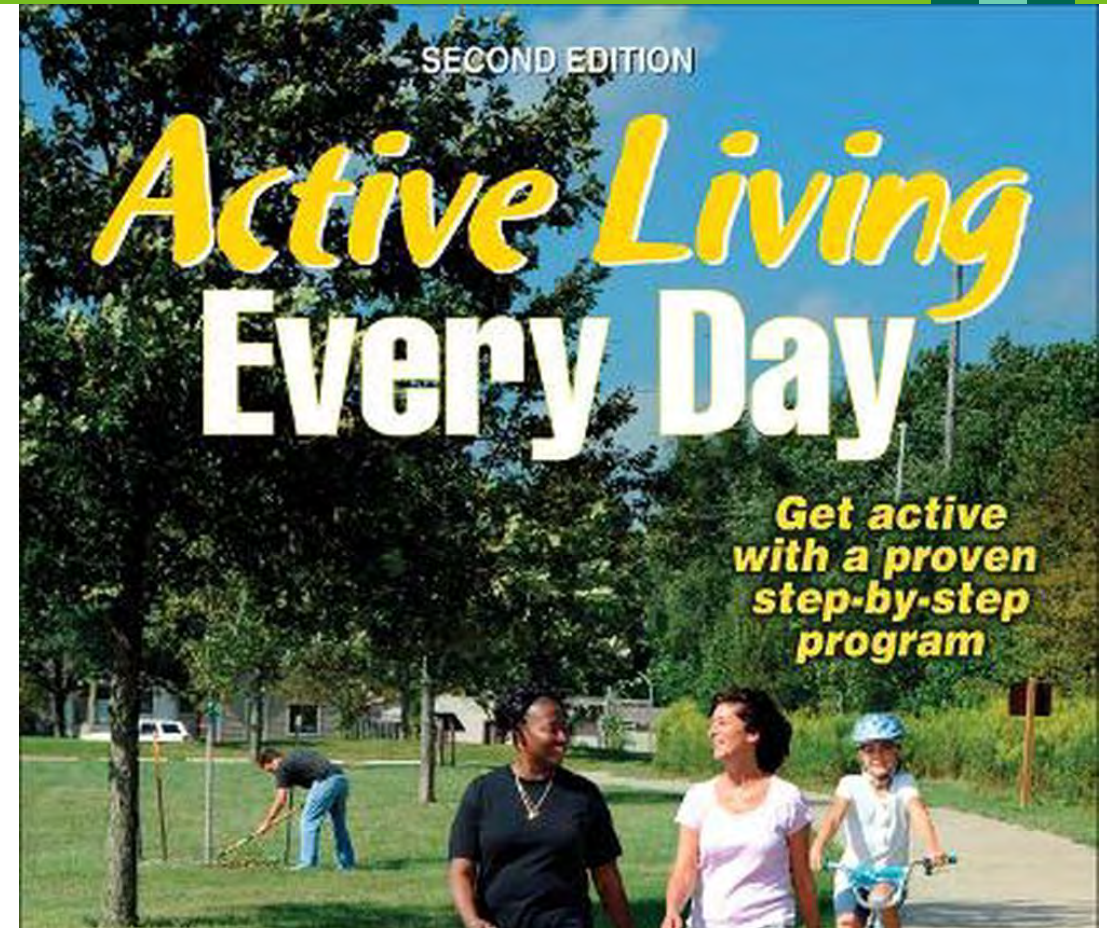
## Encourage/empower parents

- Be a role model
- Actively play with children
- Reduce screen time
- Incorporate lifestyle PA
- Integrate PA into
  - family routines
  - special celebrations
  - vacations, etc.



# Behavior change tools

- Include lifestyle physical activity
- Enlist support
- Make substitutions
- Build confidence
- Identify and problem solve barriers
- Explore new activities
- Seek out resources
- Reward yourself
- Monitor self talk
- Plan for high-risk situations



Kohl, HW, 3<sup>rd</sup>; Dunn, AL; Marcus, BH, Blair. SN. (1998).  
A randomized trial of physical activity interventions: design  
and baseline data from project active. *Medicine in Science  
and Sports Exercise*. 01, Feb 1998, 30 (2), 275 - 283



# Some things to remember

- Moderate PA
- Lifestyle PA
- Accumulating short bouts
- Behavior change is not linear
  - small changes can be significant
- Have a dialogue
- Make it relevant to the patient
  - meet the patient where they are at
- Address barriers/confidence
- Engage the parents



<https://www.youtube.com/watch?v=yitf2gUYMAk>



Questions?

Thanks for participating!

# *WELCOME to the*

## Pediatric Integrative Medicine ECHO: Changing Health Care for Children

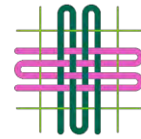
*Session 5, September 5, 2023*

### Today's Program:

- Brief housekeeping
- Didactic: Mind body therapies: MBSR, hypnosis, guided imagery, biofeedback (access, evaluating, usage etc)  
– Gerri Rubin
- Case Presentation: Gerri Rubin
- Case Discussion
- Summary
- Up Next

### Notes:

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Dartmouth  
Health Children's



# Mind Body Medicine

Gerri Rubin, MD

Chair, Pediatrics, DH Keene, Cheshire Medical Center

Associate Clinical Professor of Pediatrics, Geisel School of Medicine

# Mind Body Medicine

- Aristotle (384–322 BC)
  - Believed every person has both physical & spiritual properties, no separation between mind & body
- René Descartes (1596–1650)
  - Worried scientific materialism would make the conscious mind vulnerable to manipulation & control
  - Aimed to separate the mind from the body to protect spirit from science
  - Mind & spirit should be the focus of the church, the body the focus of science.
  - “Cartesian split”- mind–body duality
- John Locke (1632–1704) & David Hume (1711–1776)
  - Furthered the Reductionist movement shaping modern science and medicine: if reduce natural phenomena to simple components, can better understand the larger whole.
  - Reductionism facilitated great discoveries that helped humans gain control over the environment.
- Early 20th century
  - Applied science transformed medicine through the development of medical technologies.
  - Reductionism and the scientific method stimulated the growth of allopathic medical institutions.

## Mind Body Medicine

- Scientific model led to greater understanding of the pathophysiological basis of disease and the development of tools to help combat it.
- Sub-specialization of medical care facilitated application of the new information: practitioners focused on the pieces and society appreciates their abilities to fix problems.
  - Does not work well for chronic disease that involves more than just a single organ.
  - All body organs are interconnected, so repairing parts without addressing underlying causes provides only temporary relief
  - Responsible for a very expensive health care system in the United States with poor health outcomes.



# Mind Body Medicine

- Current medical system
  - Encourages patients to believe that technology, medication and procedures are the answer to their physical woes
  - Discourages them from paying attention to the complex interactions of body, mind, community, and spirit.
- Technology has widened the barrier of communication between the patient & provider.
- Old tools of the trade—rapport, gestalt, intuition, and laying on of hands—used less often as powerful drugs and high-tech interventions became more available
- Rising interest in integrative medicine now, due to
  - Deterioration of the patient–provider relationship,
  - Overuse of technology and pharmaceuticals, and the
  - Inability of the medical system to treat chronic disease adequately

## Mind Body Medicine

- Health is defined by the World Health Organization (WHO) as “a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity.”<sup>29</sup> Cure, on the other hand, refers to doing something (e.g., giving drugs or performing surgery) that alleviates a troublesome condition or disease. Healing does not equal curing.

## Mind Body Medicine

Biological perspective doctor patient relationship- reciprocal altruism- complex biological/neurologic reactions that we leverage daily

- Feeling sick - seeking relief - meeting the therapist - receiving the therapy
- Healer's brain- compassion and empathy
  - Native Healer quote: “I come to you in a good way”
- Patient's brain- trust and hope
- Placebo/nocebo mechanisms and brain changes induced by therapeutic rituals, expectation and learning

## Mind Body Medicine- Stress

- Estimates that 80% of Primary Care visits related to stress
- Dr. Bruce McEwen describes
  - Three stress categories
    - Good stress: “eustress”- leads to adaptive change and resiliency
    - Tolerable stress: “distress”- can cope but may need support- resiliency
    - Toxic stress- cannot cope
  - **Allostasis**: adaptive processes that maintain homeostasis through the production of mediators such as adrenalin, cortisol, and other chemical messengers.
    - Promote adaptation in the aftermath of acute stress
    - But can contribute to **allostatic overload**: the wear and tear on the body and brain that result from being 'stressed out.'”

## Mind Body Medicine

- In normal stress states we have a top-down control from prefrontal cortex downward(inhibitory).
- With allostatic overload we have bottom-up control with the amygdala activating first.
  - -Dysregulation HPA axis, inflammation, hormone derangements, disrupted neuronal activity on fMRI
  - Chronic stress leads to chronic disease states
- About 25% of pediatric patients have anxiety!

## Mind Body Medicine The Relaxation Response

- Dr. Herb Benson- The Relaxation Response, 1970's study of BP in Transcendental meditators
  - Quantified what others had know for centuries before the “Cartesian split”
  - Taught four elements usually elicited the relaxation response:
    1. Mental device: repeating a word, prayer, or mantra
    2. Passive attitude: thoughts that occur during meditation are disregarded, not judged, or followed
    3. Decreased muscle tone: sitting in a comfortable position
    4. Quiet environment: closing the eyes

## Relaxation Response

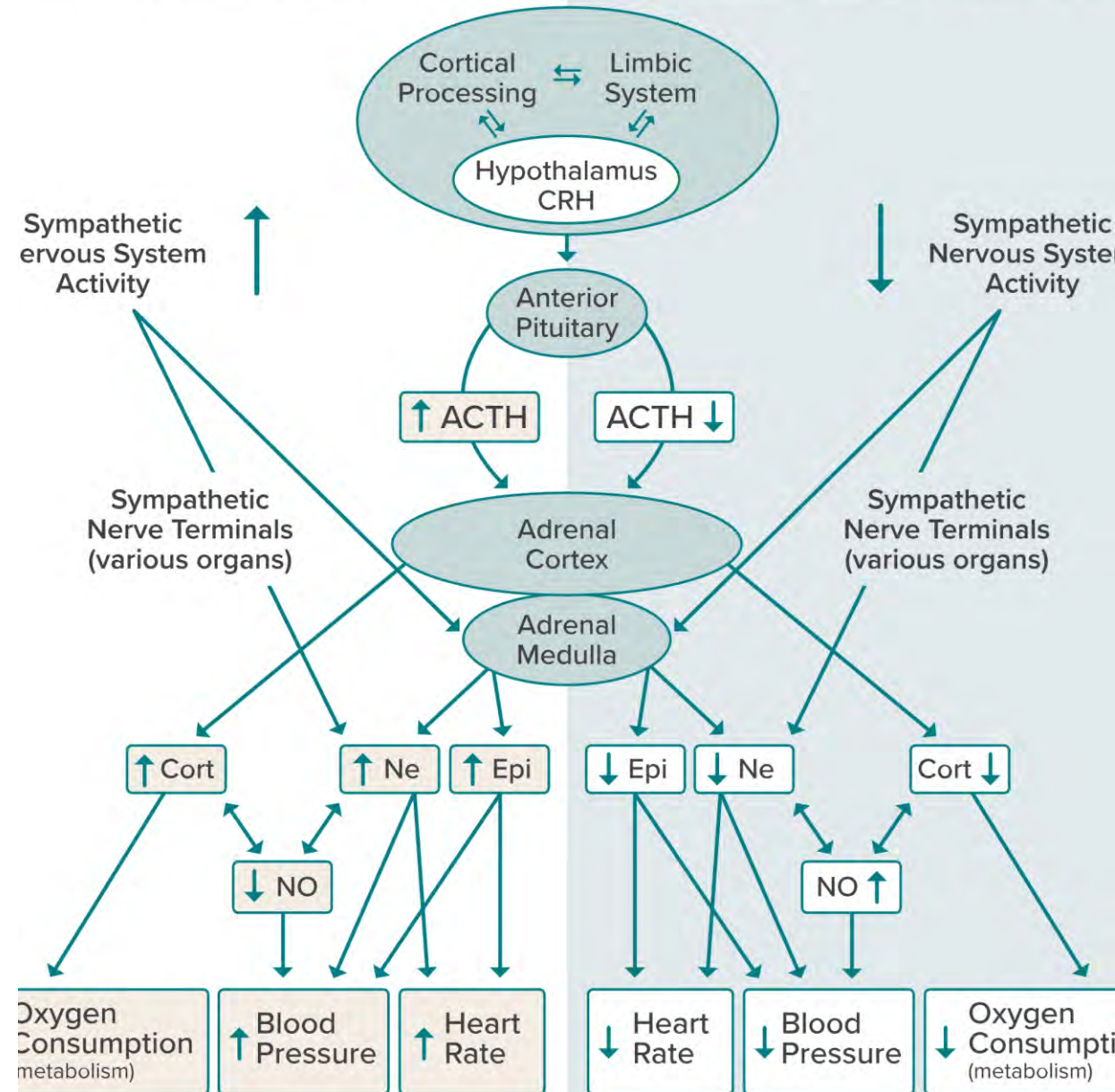
- Improved heart rate variability
- Improves telomere lengths
- Altered gene expression
- Improved immune function
- Alteration in microbiome and gut brain axis

## STRESS RESPONSE

(Involuntary/Reflective)

## RELAXATION RESPONSE

(Requires conscious elicitation and repeated practice)



## Mind Body Modalities to Down-Regulate the Nervous System

- Breathing- general concept is to decrease to 6 breaths per minute impacts HRV, BP, pain, memory i.e bellows breathing, 4-7-8 breathing
- Meditation
- Mindfulness/MBSR-changes in prefrontal cortex, amygdala and connectivity
- Yoga
- Guided Imagery
- Hypnosis
- Progressive muscle relaxation
- Biofeedback-HRV, EMG, thermal feedback, neurofeedback/EEG
- Tai Chi/Qi gong
- Emotional Freedom Technique
- CBT



## Mind Body Medicine- The Evidence in Pediatrics

- Researching mind body intervention is challenging.
  - Double blind, randomized, placebo-controlled trials do not fit well the complex biopsychosocial framework, a short fall of reductionism and research methodology in allopathic medicine
  - No big pharma to pay for research studies.
- Last AAP review article, Section on Integrative Medicine, Hillary McClafferty 2016
  - Biofeedback- evidence in headache, asthma, enuresis, neurofeedback ADHD?, chronic pain- expensive
  - Clinical hypnosis-evidence functional abdominal pain, procedural and chronic pain
  - Guided Imagery-stress reduction, pain management, improved psychological function-caution in trauma
  - Meditation/MBSR- evidence mental health, coping, self regulation, HTN, negative school behaviors
  - Yoga- pain, emotional, mental and behavioral conditions-studies had limitations
- Adverse event reporting of Mind Body intervention is limited.
  - 2021 systematic review showed 85.5% of studies did not report AEs.
  - Grade 3 was highest grade of AE's, majority Grade 1.
  - Causality not clear in many cases.

*Mind-Body Therapy in Children & Youth, McClafferty H et al, Pediatrics Volume 138, number 3, September 2016*

*Adverse Events in Mind-Body Interventions in Children: A Systematic Review*

*Lyszczuk et al, Children 2021,8,358*

## Pediatric Evidence for GI disorders

- Functional GI Disorder- IBS, functional abdominal pain, functional constipation, functional dyspepsia
  - Disturbance in the gut brain axis- disruption of bidirectional communication between gut and brain via ANS, endocrine and immune pathways
  - Leads to changes in endocrine pathways, immune response, motility, sensation
- Brain-gut therapy effective in functional GI disorders & inflammatory bowel disease
  - Best evidence for CBT, exposure-based therapy, hypnotherapy & mindfulness in functional GI disorders
  - But also important in IBD as well

## Pediatric Evidence Clinical Hypnosis/Guided Imagery

- Kids < 14 years- highly susceptible to hypnotic state
- 14-20 years 90 % susceptible to hypnotic state
- Scripts used to fit child and their interests- post hypnotic suggestions to provide symptom relief, gain control of symptoms or build self confidence
- Online therapy & home-based self exercises are non inferior to individual, in person therapy
- Strong evidence for
  - Pain reduction in acute procedures involving needles,
  - Decreased use of sedatives and analgesics, decreased length of hospital stay
  - GI pain, headaches, asthma, anxiety
- Possible effectiveness in ADHD

## Other Findings

- Mindfulness based interventions evidence -anxiety, depression, eating disorder, SUD, pain
- 2020 review of nonpharmacologic management of **ADHD** showed meditation, yoga, Tai chi had impact on inattention, increased executive function, improved self esteem and remarkably a systematic review of 34 trials showed tai chi comparable to methylphenidate in short term, more stable effect in long term. Mindfulness lacked adequate data in children but significant improvement in inattention in adults
- 2020 review yoga, meditation and mindfulness in **pediatric oncology** shows improved QOL, sleep, activity and fitness level, increase appetite, decreased anxiety, decreased fatigue- need better designed studies- no conclusions

*Non-pharmacologic management of attention deficit/hyperactivity disorder in children and adolescents: a review*

*Shrestha et al, Translational Pediatrics 2020;9(Suppl1):S114-S124*

*Yoga, Meditation and Mindfulness in pediatric oncology: a review, Stritter et al, Complementary Therapies in Medicine*

*63(2021) 102791*

*Mindfulness based intervention for adolescent health, Lin et al, Current Opinion Pediatrics; Volume 31, Number 4, August*

*2019*

## What You Can Deliver

- Always introduce the biopsychosocial model of health as you approach a complaint
- When recommending Mind Body techniques to patients, do so in the context of the patients' personal health, and in relation to their daily lives, families, communities, belief systems, and sociocultural locations
- Breathe with your patients and families in the office- find a couple techniques and practice with them- emphasize the power of breath
- Watch the Magic Glove video and try it with a patient for IV or vaccines, teach parents the technique, send them home with a glove!!!  
<https://www.bing.com/videos/search?q=magic+glove+video&view=detail&mid=5C1D45FCF532934F68E15C1D45FCF532934F68E1&FORM=VIRE>
- Figure out what patients have learned at school- lots of breathing, yoga and mindfulness being taught- have them teach you
- Recommend resources: [gonoodle.com](http://gonoodle.com)- yoga and relaxation; Insight timer free app- sleep, meditation, mindfulness, CHOC Guided Imagery recordings <https://www.choc.org/programs-services/integrative-health/guided-imagery/>
- Try guided imagery with a patient in the office for a vaccine or procedure
- Find local referral resources

# *WELCOME to the*

## Pediatric Integrative Medicine ECHO: Changing Health Care for Children

*Session 6, September 21, 2023*

### Today's Program:

- Brief housekeeping
- Didactic: Mind body therapies: MBSR, hypnosis, guided imagery, biofeedback (access, evaluating, usage etc)
  - Matt Hand
- Case Presentation: Andy Wegman
- Case Discussion
- Summary
- Up Next

### Notes:

- Enter name, organization into chat
- Raise virtual hand or enter comments in chat at any time. We will call on you when it works. Please mute otherwise.
- To protect individual privacy, please use non-identifying information when discussing cases.
- We will be recording the didactic part of these sessions. *Participating in these session is understood as consent to be recorded. Thank you!*
- Closed Captioning will be enabled during sessions
- [Submit cases](#)

# Botanical Boot Camp: Common Supplements and Herbs and How to Evaluate Them

Matthew Hand DO

Section Chief, Pediatric Nephrology and Integrative Medicine  
Dartmouth Health, Children's/Children's Hospital at Dartmouth

# Disclosure

- ▶ As previously disclosed: Davinici labs/foodscience.



The background features abstract, overlapping geometric shapes in various shades of green, ranging from light lime to dark forest green. These shapes are primarily located on the left and right sides of the frame, creating a modern, layered effect. The central area is a plain white space where the text is located.

Is The Supplement World The  
Wild, Wild West?

# Who is using it and what are they using

- ▶ In the US, (1997)~1/3 of all adults use CAM
- ▶ Visits to CAM providers
  - ▶ 1990:420 million, 1997:629 million (up by47%)
  - ▶ 1997 estimated 21.2 billion dollars ~12billion out of pocket
  - ▶ 2007 14 Billion spent out of pocket to treat pain, 33.9 total out of pocket for all issues (NIH)
  - ▶ 2015 40 Billion dollars spent on botanicals and supplements alone. New estimates up over 200 Billion dollars per year spent

# Clear as Mud!

- ▶ Events in NY and the NY AG regarding Walmart, Target, GNC etc is the recent event raising the issues about supplements/botanicals
- ▶ Multiple botanicals tested negative for what they claimed and had in them contaminants.
- ▶ Critics point out that this is a common occurrence and show that the **FDA doesn't regulate products.**
- ▶ Critics also say that it re-enforces that there is no place for these supplements in health care even though the two would be unrelated

- ▶ Once this hit the news: multiple reports in all media
- ▶ Who has seen any follow up?
- ▶ Is it true?
- ▶ Is there regulation?
- ▶ Is there a direct correlation to price?
- ▶ How do we know?
- ▶ What do I like to use for the conditions we will discuss today?

# Follow up

- ▶ Testing called into question:
  - ▶ **DNA testing doesn't pick up extract**
  - ▶ Also misses treated plants where DNA breaks down.
- ▶ GNC:
  - ▶ showed testing process-met all regulations
  - ▶ Agreed to more stringent testing
- ▶ No news: Hardly anyone carried it.

# Preparations

- ▶ Infusion -- a water extraction of soluble compounds from fresh or dried flowers, leaves, or seeds in hot water. Infusions prepared by steeping the herb in hot water for a minimum of 5 -10 minutes.
- ▶ Macerate -- an herbal infusion made with cold or room temperature water to minimize loss of important volatile oils, which can be destroyed by heat.
- ▶ Decoction -- a water extraction prepared by simmering roots, barks or other hard plant parts for a prolonged period of time. Decoctions can be made from fresh plant material but they are generally prepared from dried. Prolonged heat is necessary to rehydrate dried roots and barks, which will allow for maximum extraction of water-soluble constituents. Decoctions are the most popular method for preparing herbs throughout most of the world.
- ▶ Tincture -- a hydroethanolic preparation of plant material usually obtained using 1 part of herbal drug and 5 parts of extraction solvent (1:5).
- ▶ Fluid extract -- a hydroethanolic preparation of plant material where 1 part by mass or volume is equivalent to 1 part by mass of the herbal drug (1:1). (Also referred to as liquid extract.)
- ▶ The strength of a hydroethanolic extract is based on the relative metric weight of herb to the total metric volume of the solvent used for extraction. The dilution may vary from 1:1 to 1:5 (or greater) when preparing a fluidextract and tincture, respectively.
- ▶ *1kg of herb has been fully exhausted to yield 1L of extract in a fluidextract (1:1).*
- ▶ *1kg of herb has been fully exhausted to yield 5L of tincture (1:5).*

From Dr. Tieraona  
Low Dog, AZCIM

**Supplement Facts**

Serving Size: 2 Capsules  
 Servings per Container: 40

Amount Per Serving		% DV
Calories	2	
Calcium	40 mg	4%
Echinacea root 6:1 extract	112.5 mg	†
From <i>Echinacea purpurea</i> root (Containing alkylamides 2.1 mg)	675 mg	
Golden Seal root and rhizome 3:1 extract	166.7 mg	†
From <i>Hydrastis canadensis</i> root and rhizome 500 mg		

Percent Daily Values are based on a 2000 calorie diet.  
 † Daily Value (DV) Not Established

Other ingredients: Calcium acid phosphate, cellulose, silica, magnesium stearate

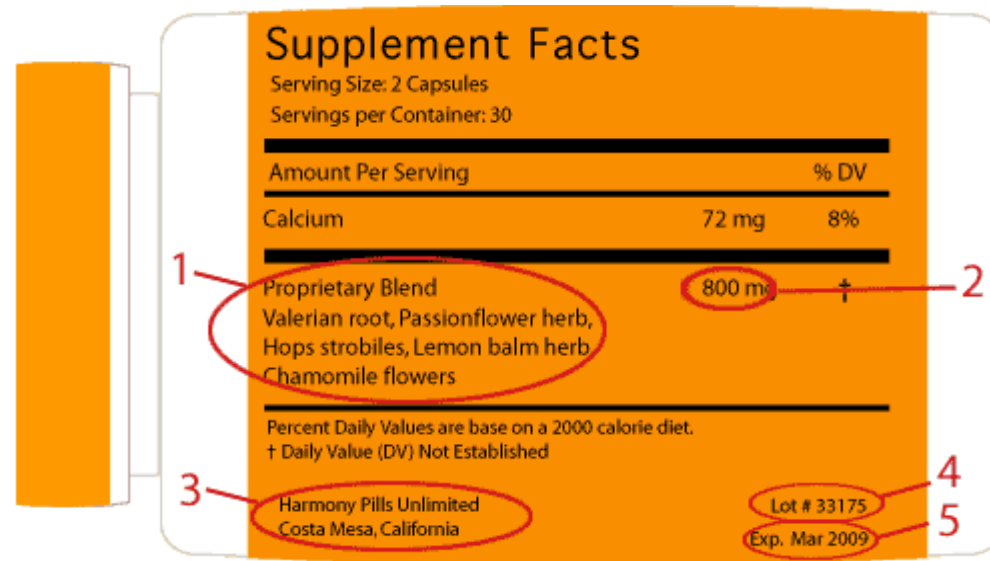
1. "Serving Size". 2. "Servings per Container" 3. "Percent Daily Value" (%DV)

4. Common Name 5. Plant Part - 6. Extract Ratio -

7. Botanical Name 8. Quantity of Starting Material 9. Quantity of Extract

10. Standardization 11. Other ingredients

From Dr. Tieraona Low Dog, AZCIM content



1. Herbal formulas with multiple ingredients -- the herbs must be listed in descending order of predominance. If the herbs are grouped as a proprietary blend, only the total milligrams of the blend is required to be listed.
2. The amount in milligrams of each herb must be listed unless the herbs are grouped as a proprietary blend -- then only the total amount of the blend need be listed.
3. The label must include the name and place of business of manufacturer, packer, or distributor.
4. Lot numbers -- are used to trace a product's journey through the supply chain so that the origin of its ingredients can be determined. This is useful for checking the quality of the product or in the rare event that a product needs to be recalled. Most reputable manufacturers include a lot number on their products.
5. Expiration date -- the date after which a product may no longer contain the labeled potency levels. While some botanical products include an expiration date, it is often only an estimate, as many manufacturers do not conduct stability trials.

From Dr. Tieraona  
Low Dog, AZCIM



# How do we know

- ▶ Strongly recommend looking at 3 party reviewers
  - ▶ Look not only at individual products but also trends
  - ▶ In general avoid proprietary blends unless trusted supplier and tells individual doses

# What Are My Common Resources

- ▶ Natural Standards and Natural Medicine Database
- ▶ NSF International
  - ▶ <http://www.nsf.org/>
- ▶ United States Pharmacopia
  - ▶ <http://www.usp.org/>
- ▶ Consumerlabs.com
  - ▶ [www.consumerlabs.com](http://www.consumerlabs.com)

# What Are My Common Resources

- ▶ Natural Standards Natural Medicine Database
- ▶ [www.consumerlabs.com](http://www.consumerlabs.com)
  
- ▶ Lets take a look!

# So what do I use for things we see every day

- ▶ Anxiety/Insomnia
- ▶ Depression
- ▶ ADHD
- ▶ Abdominal pain/Colic

# Anxiety

## ▶ Valerian

- ▶ 2-6 grams per day

- ▶ "A combination of valerian and lemon balm is effective in the treatment of restlessness and dysomnia in children." Muller SF, Klement S. *Phytotherapy : international journal of phytotherapy and phytopharmacology* 2006
- ▶ "Treating depression comorbid with anxiety--results of an open, practice-oriented study with St John's wort WS **5572 and valerian extract in high doses.**" von den Driesch V et al. *Phytotherapy : international journal of phytotherapy and phytopharmacology* 2003

- ▶ Smells bad

## ▶ L-theanine: amino acid from green tea

- ▶ "L-Theanine: **properties, synthesis and isolation from tea.**" Roach PD et al *Journal of the science of food and agriculture* 2011
- ▶ L-theanine relieves positive, activation, and anxiety symptoms in patients with schizophrenia and schizoaffective disorder: an 8-week, randomized, double-blind, placebo-controlled, 2-**center study.**" Lerner V et al. *J Clin Psychiatry.* 2011
- ▶ "Time for tea: mood, blood pressure and cognitive performance effects of caffeine and theanine administered alone **and together.**" Pleydell-Pearce CW et al. *Psychopharmacology (Berl).* 2008

## ▶ Rhodiola

- ▶ Popular with the Vikings for enhancing mental and physical endurance
- ▶ Purported to treat depression, enhance work performance, decrease fatigue, and prevent high altitude sickness.
- ▶ In Sweden and other Scandinavian countries it is used to increase the capacity for mental work and as a general strengthener.
- ▶ Possible actives in rhodiola: rosavins, rosiridin and salidroside.
  - "A pilot study of Rhodiola rosea (Rhodax) for generalized **anxiety disorder (GAD)**." Feusner JD et al. *Journal of alternative and complementary medicine* 2008

# Depression

## ▶ Omega 3s

- ▶ A number of meta-analyses/systematic reviews evaluating the effectiveness of omega-3 fatty acids in depression
  - ▶ "A meta-analytic review of double-blind, placebo-controlled trials of antidepressant efficacy of omega-3 fatty acids." Su KP et al *The Journal of clinical psychiatry* 2007
  - ▶ Omega-3 fatty acids: evidence basis for treatment and future research in psychiatry." Freeman MP, Hibbeln JR, Wisner KL, Davis JM, Mischoulon D, Peet M, Keck PE, Marangell LB, Richardson AJ, Lake J, Stoll AL. *The Journal of clinical psychiatry* 67(12):1954-67 Dec, 2006
  - ▶ Efficacy of omega-3 fatty acids in mood disorders - a systematic review and metaanalysis. Unal SS et al
- ▶ More recent meta-analysis of 15 trials involving 916 subjects suggests that omega-3 fatty acid supplement with EPA greater or equal to 60 percent of total EPA and DHA showed highest benefit against primary depression

- ▶ B vitamins
- ▶ Iron
- ▶ Zinc
  - ▶ studies have reported an association between low zinc status and depression, and evidence that zinc supplementation has an antidepressant effect
    - ▶ "Zinc: the new antidepressant?" Levenson CW. *Nutrition reviews* , 2006



## ▶ Vit D

- ▶ Association in adults with vit D def and mood disorder
  - ▶ "Some new food for thought: the role of vitamin D in the mental health of older adults." Roos BA et al, Levis S. *Current psychiatry reports*, 2009
  - ▶ Association between low serum 25-hydroxyvitamin d and depression in a large **sample of healthy adults: the cooper center longitudinal study.** Brown ES et al. *Mayo Clin Proc.* 2011
- ▶ ? Proper level
- ▶ Roughly 400-800 U when little, 1000 U when older, 2000 Units adolescents.

▶ SAMe: serotonin precursor

- ▶ A meta-analysis of placebo-controlled studies on SAMe in depressed mood confirms efficacy and safety equivalent to conventional anti-depressants
  - ▶ "St. John's wort and S-adenosyl methionine as 'natural' alternatives to conventional antidepressants in the era of the suicidality boxed warning: what is the evidence for clinically relevant benefit?" Carpenter DJ. *Altern Med Rev.* 2011
- ▶ Patients not responded/partially responded conventional antidepressants, titrating SAMe 800mg to 1600mg/day improves response rate of clinical improvement
  - ▶ "S-adenosyl-L-methionine (SAMe) as an adjunct for resistant major depressive disorder: an open trial following partial or nonresponse to selective serotonin reuptake inhibitors or venlafaxine." , Fava M et al. *Journal of clinical psychopharmacology* 2004
- ▶ Expensive, commonly use 200-400 mg

▶ Rhodiola:

- ▶ Several clinical trials: rhodiola extract (SHR-5)- anti-fatigue, increases mental performance
- ▶ **Reduces “burnout” in patients with chronic fatigue**
- ▶ 340 or 680 mg/day over a 6-week period vs placebo-sig improvement
  - ▶ "Clinical trial of Rhodiola rosea L. extract SHR-5 in the treatment of mild to moderate depression." Panossian A et al. *Nordic journal of psychiatry* 2007

▶ St johns wort

- ▶ 29 trials (5489 patients)
- ▶ 18 with placebo
- ▶ 17 standard antidepressants
- ▶ Conclusion: St. John's wort (SJW)
  - ▶ superior to placebo in patients with major depression
  - ▶ are similarly effective as standard antidepressants
  - ▶ have fewer side effects than standard antidepressants
  - ▶ "[St. John's wort for depression--development of a Cochrane review from 1993 to 1996]" Linde K Cochrane Review 1993-1996 *Zeitschrift für Evidenz, Fortbildung und Qualität im Gesundheitswesen* 2008

- ▶ Placebo-controlled studies
  - ▶ Equivalent efficacy to tricyclic anti-depressants
  - ▶ 3 studies equivalent efficacy to SSRIs: fluoxetine, sertraline, and paroxetine
    - ▶ "Equivalence of St John's wort extract (Ze 117) and fluoxetine: a randomized, controlled study in mild-moderate depression." Schrader E. *International clinical psychopharmacology* 2000
    - ▶ "Effect of Hypericum perforatum (St John's wort) in major depressive disorder: a randomized controlled trial." Hypericum Depression Trial Study Group *JAMA : the journal of the American Medical Association* 2002
    - ▶ "Acute treatment of moderate to severe depression with hypericum extract WS 5570 (St John's wort): randomised controlled double blind non-inferiority trial versus paroxetine." Kieser M et al. *BMJ* 2005
  - ▶ The dose is 900-1500 mg per day in 2-3 divided doses of an extract standardized to 0.3% hypericin and/or 3-5% hyperforin.

# ADHD+Supplements/Herbs

- ▶ Omega-3 Fatty acids/Essential fatty acids (EFAs).
  - ▶ Important for brain development and function.
  - ▶ EPA (eicosapentaenoic acid) and DHA (docosahexaenoic)
  - ▶ Evidence towards low EFAs in ADHD (Burgess 2000)
  - ▶ Appears it may help in ADHD developmental coordination disorder, learning disabilities and certain behavioral issues
- ▶ Recent Review out of Yale: Nutritional Supplements for the Treatment of Attention Deficit Hyperactivity Disorder
  - ▶ MH Bloch, J Mulqueen; Child Adol Psych Clinics of North America 2014

# Clear as mud

- ▶ **Sinn (2009):** “Although further research is required, the current evidence supports indications of nutritional and dietary influences on behavior and learning in these children, with the strongest support to date reported for omega-3s and behavioral food reactions.”
- ▶ **Raz (2009):** “Current findings do not support the use of EFA supplements as a primary or supplementary treatment for children with ADHD.”
- ▶ What do I do: Recommend DHA and EPA, trying to get 1-2 gms per day in.
- ▶ Good recent review
  - ▶ The Diet Factor in Attention-Deficit/Hyperactivity Disorder *Pediatrics*J. Gordon Millichap and Michelle M. Yee

# Botanical Medicine

- ▶ Ginkgo and American Ginseng
  - ▶ Believed to have a positive effect on memory and learning
  - ▶ **Lyon's et al: 36 children, up to 17 yo, Ginseng 200mg, Ginkgo 50 mg**
  - ▶ Over one month 30-74% improvement of social issues, 2 w/ side effects reported.
  - ▶ No control/placebo group.



# Other Supplements

## ▶ Zinc

- ▶ One of the common ones discussed
- ▶ Bilici et al (2004): 400 children randomized, blinded high dose zinc (150 mg) improvement in hyperactivity, impulsiveness and socialization but not inattentiveness.
- ▶ Akhondzadeh et al (2004): Zinc, 15 mg elemental zinc, with improvement, placebo and blinded, 40 children on Ritalin.

## ▶ Valerian

- ▶ Muller et al (2006): valerian and lemon balm in restlessness and dyssomnia, 900 children, no placebo, 70-80% improvement.

▶ Iron:

- ▶ Iron deficiency in ADHD greater than controls (some studies/reviews)
- ▶ Ferritin <30 in 84% ADHD patients
- ▶ When levels low, correlated with worse ADHD scores.
  - ▶ Konofal et al Arch Peds Adol Med 2004
- ▶ Follow up study (with placebo)
- ▶ Given iron- better Clinical global impression scale, not in placebo
- ▶ Also Conners better (not stat sig)
  - ▶ Konofal et al Peds Neurol 2008
- ▶ More studies comparing medication response, Australian study with Brain Ferritin with ADD
- ▶ Will test prior to treating (2-6 mg/kg elemental iron)

## Peppermint oil:

Carminative- gas relieving

Menthol- component which acts to relax smooth muscle by blocking calcium channels; most products have 44% menthol

Also found to have mild topical anesthetic effect

In children found to be both safe and effective.

Dose: 0.2-0.4 ml per day

Forms: enteric coated, peppermint oil soft gels, oil

Randomized, double-blind, controlled 2-week trial:

50 children; dose- 1-2, 187mg peppermint oil 3X/day for 2 weeks

76% receiving enteric coated peppermint oil caps with decrease Sx

19% decrease in placebo group

Kline et al. *J Pediatr* 2001;138:125-8.



From Mark Integlia MD,  
Dir. Peds GI Elliot Health  
System

# Complementary and Alternative Therapy

## Probiotics:

Ecosystem of gut may differ at times of illness and health

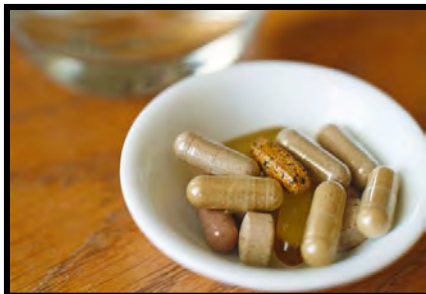
Anti-inflammatory effect of probiotics

Barrier effect with alteration of mucus layer

Treatment- traveler's diarrhea and viral gastroenteritis

Lactobacillus and Bifidobacterium studied most often

Forms- powder, yogurt, capsules, chewable tablets, freeze-dried powders, wafers and beverages.



From Mark Integlia MD,  
Dir. Peds GI Elliot Health  
System

# Colic

- ▶ Two good reviews
  - ▶ Rosen et al *Pedi* in review 2009
  - ▶ Rosen : *Explore* July 2007
- ▶ Fennel seed oil
  - ▶ 125 colicky babies, placebo controlled
  - ▶ 65% improvement in treatment group vs 24% control
- ▶ Botanical blends
  - ▶ Fennel, chamomile, vervain, licorice, lemon balm
    - ▶ Large volume (3 oz/day)
    - ▶ 57% improved crying vs placebo 26%
  - ▶ Fennel, chamomile, lemon balm, rosemarinic acid, b vit
    - ▶ Crying decreased by 85% in treatment group, stat sig vs placebo
    - ▶ 200->76 min per day



▶ Probiotics

▶ 2009 L. Reuteri 100 mill CFUS

▶ Compared to simethicone

▶ Improvement in one week, increased over 4 weeks, 200min/d-→159-→51min/d

▶ 95% response vs 7% in simethicone group

▶ 2010 repeated with placebo only

▶ Again stat significant in probiotic group

# *WELCOME to the*

## Pediatric Integrative Medicine ECHO: Changing Health Care for Children

*Session 7, October 3, 2023*

### Today's Program:

- Brief housekeeping
- Didactic: Acupuncture  
– Britton Mann
- Case Presentation: Andy Wegman
- Case Discussion
- Summary
- Up Next

### Notes:

- Enter name, organization into chat
- Raise virtual hand or enter comments in chat at any time. We will call on you when it works. Please mute otherwise.
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- [Submit cases](#)



*BU TONG ZE TONG, TONG ZE BU TONG*  
不通這痛, 痛則不通

“when there is blockage, there is pain...  
with free-flow, there is no pain”



# Crash Course for DH Peds Echo: Traditional East Asian Medicine

Britton Mann, DAOM, L.Ac.  
Open Door Integrative Wellness  
White River Junction, Vermont

# Crash Course for DH Peds Echo: Traditional East Asian Medicine

- I have no conflicts of interest.





Acupuncture and herbal medicine in the wild



# Learning Objectives

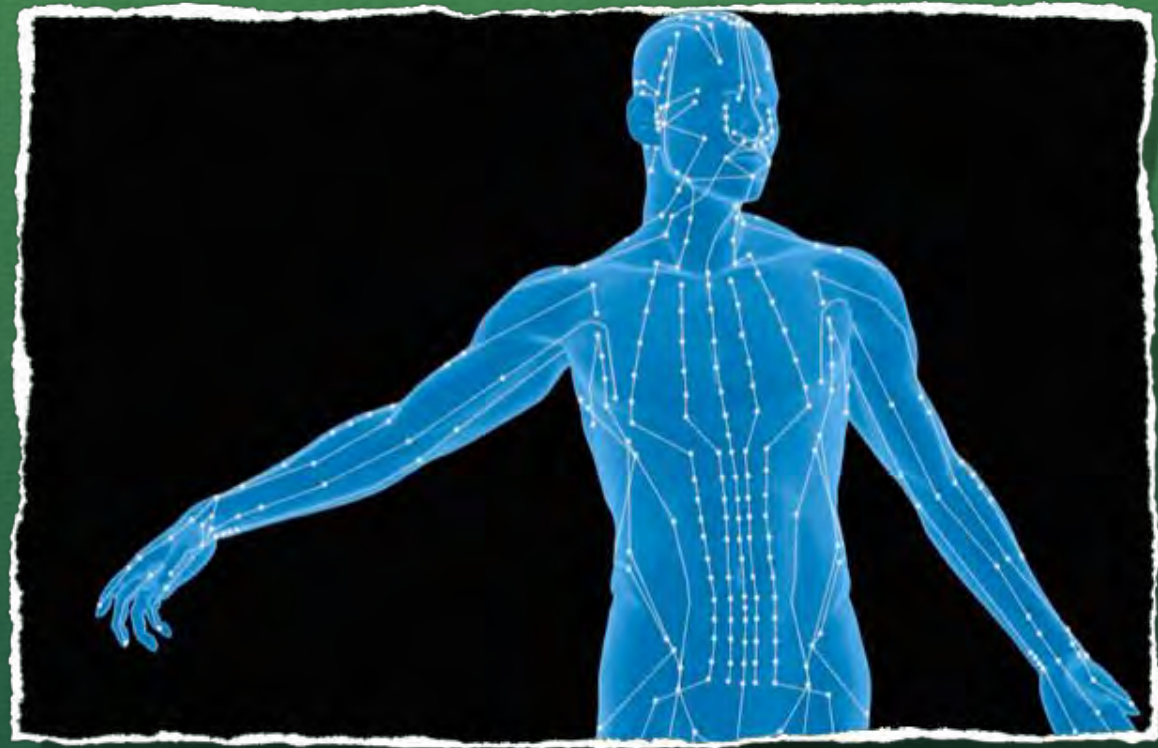
- Questions about IM/CAM/teAm that I might loop into this discussion.
- Bringing you up to speed on Chinese medical anatomy and physiology.
- Crash course in diagnostics and treatment – you too can think like a teAm practitioner.
- Bringing something like the teAm mindset (IM of any kind) immediately to your patient care.

Questions? Write them into the chat and we'll leave plenty of time to "answer"

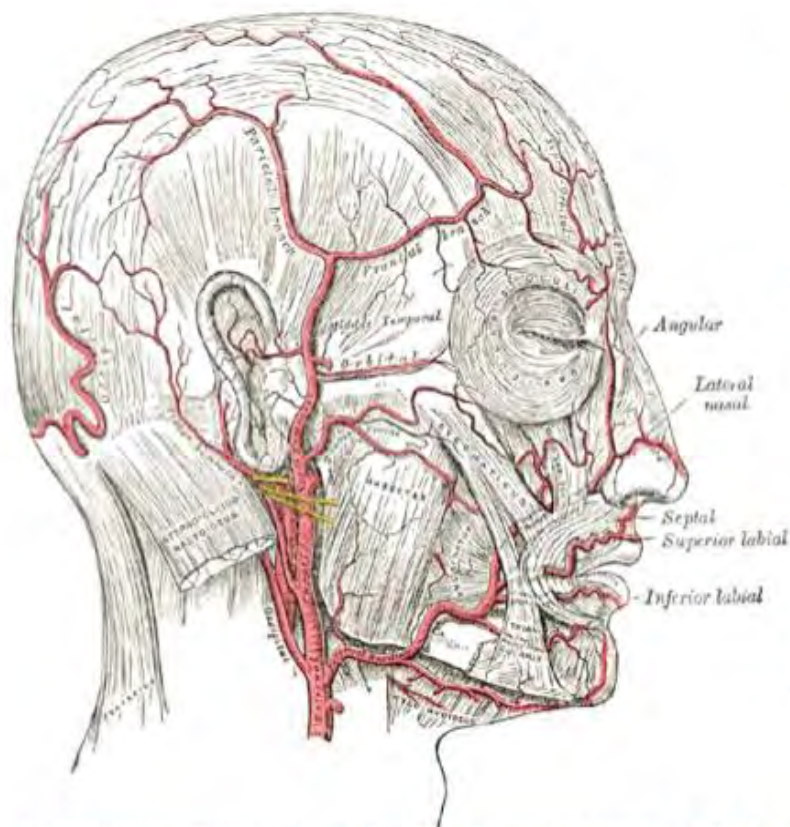
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## morphology of the channels and collaterals



Līngshū 10: Translation by Dr. Edward Neal, MD, LAc

1. The stomach foot yangming (陽明 yang brightness) mai vessel arises from the crossing point at the bridge of the nose near the taiyang mai vessel (胃足陽明之脈起於鼻之交頰中旁納太陽之脈).
2. Descending along the outer aspect of the nose it enters the upper teeth (下循鼻外入上齒中). Turning back it emerges from the mouth, encircles the lips and descends to meet chengjiang (承漿 sauce container) (還出挾口環脣下交承漿).
3. Passing along the lower border of the cheek, it emerges at daying (大迎 great welcoming) (卻循頤後下廉出大迎).
4. Crossing jiache (頰車 jaw axle) it ascends in front of the ear and passes kezhuoren (客主人 guest's host) (循頰車上耳前過客主人). Following the border of the hairline it arrives at the forehead (循髮際至額顙).

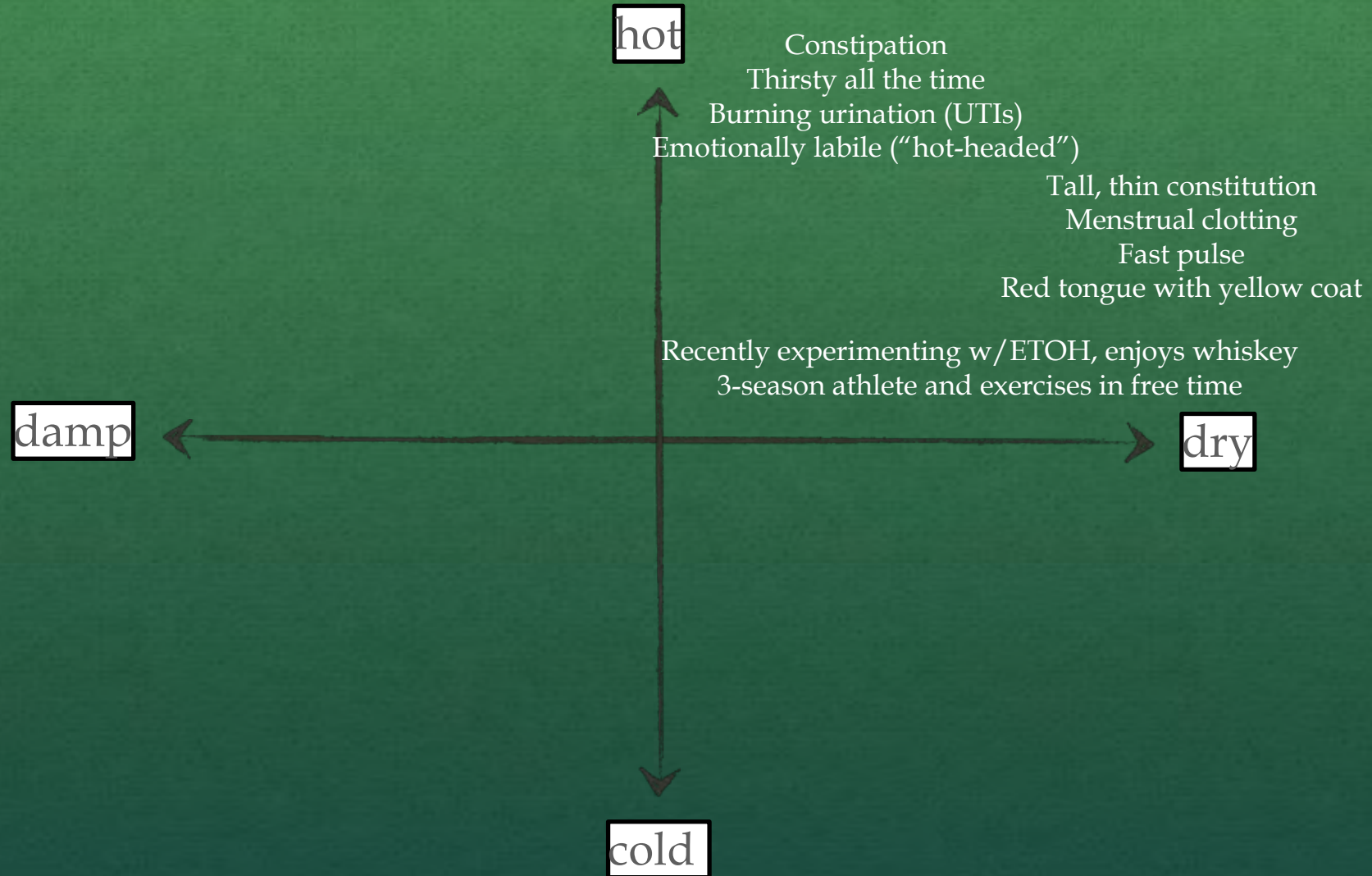




# Learning Objectives

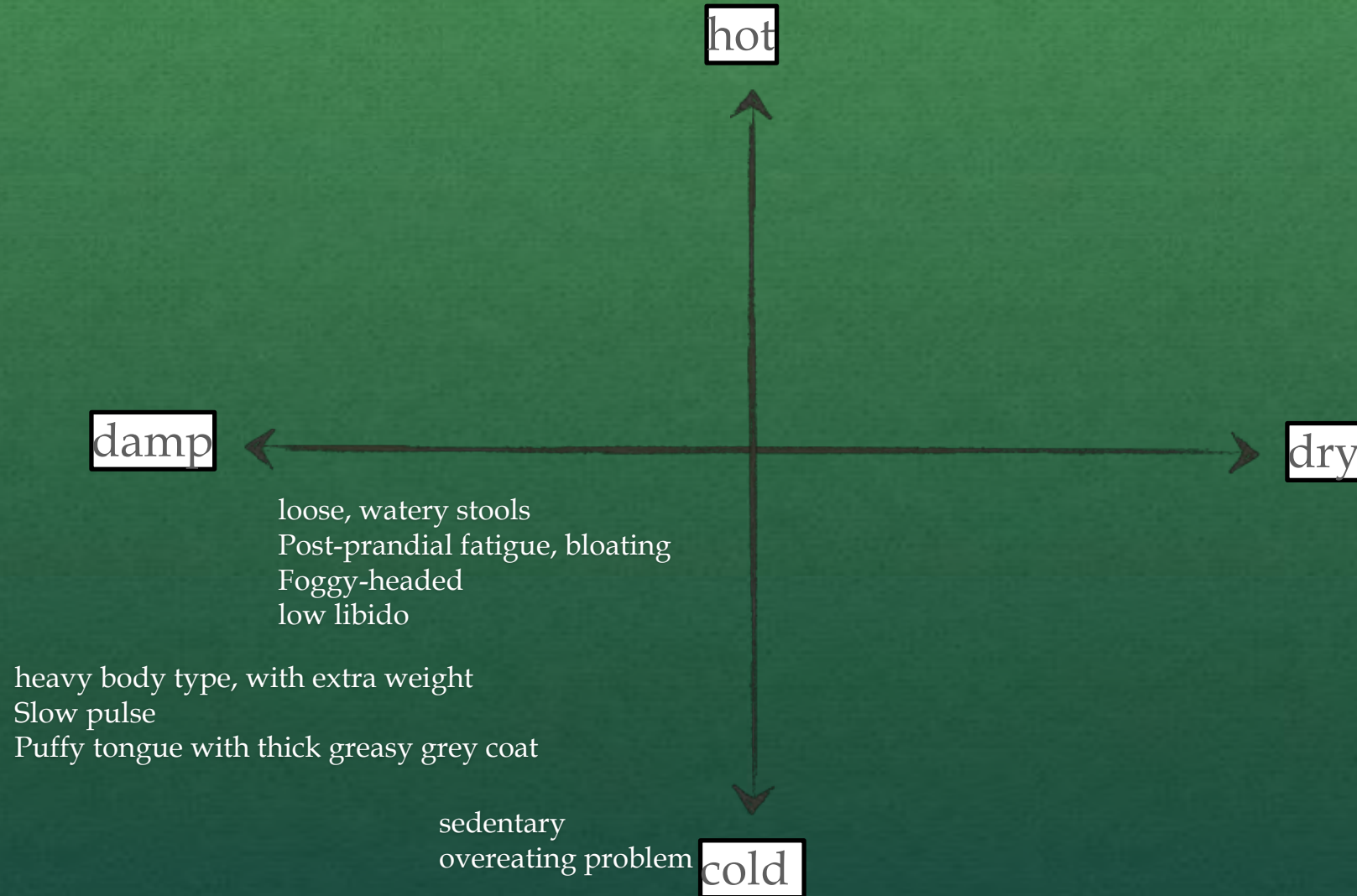
- Questions about IM/CAM/teAm that I might loop into this discussion.
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- Bringing something like the teAm mindset (IM of any kind) immediately to your patient care.

# Angelique's Internal Landscape





# Danny's Internal Landscape



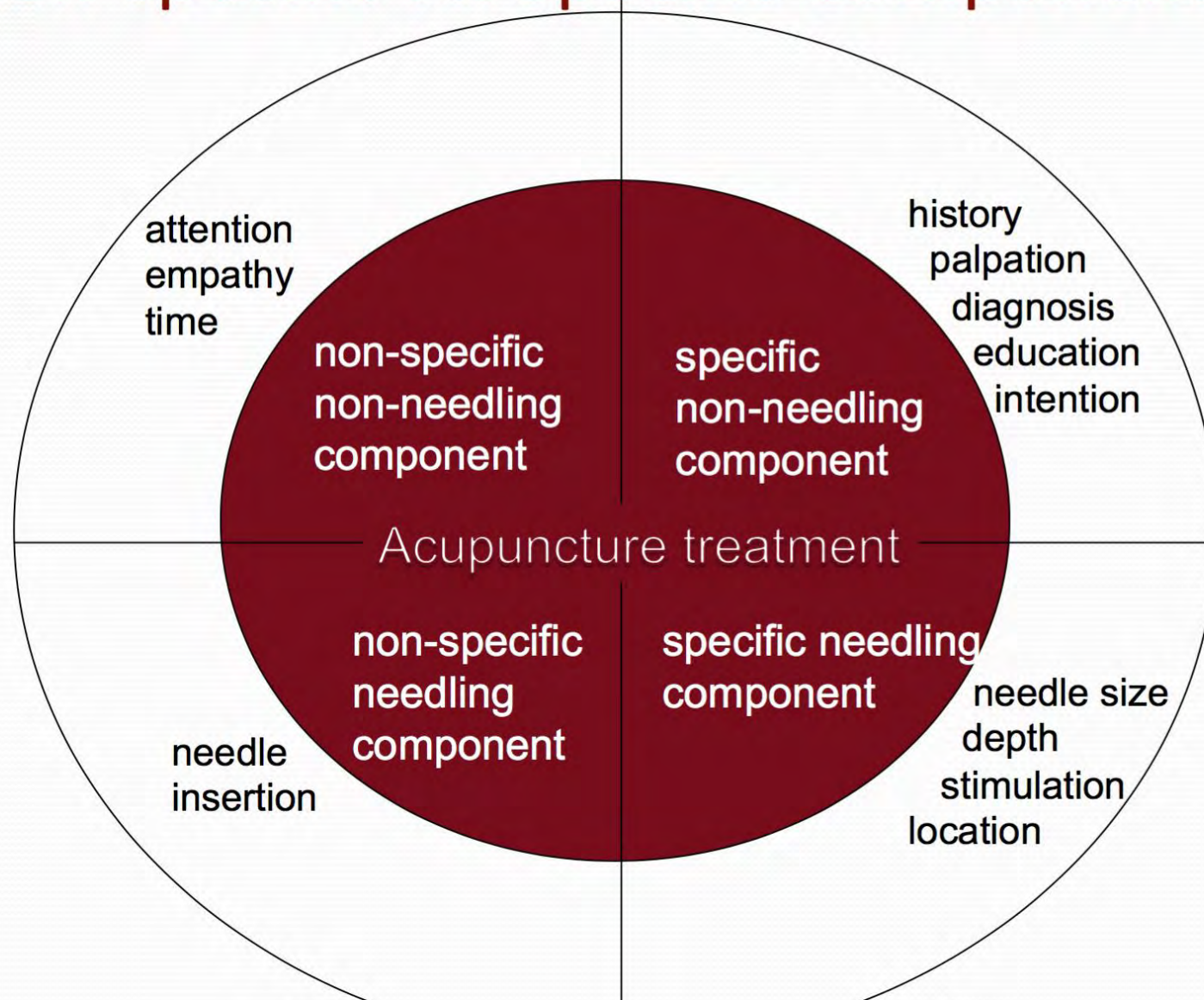




# Learning Objectives

- Questions about IM/CAM/teAm that I might loop into this discussion.
- Bringing you up to speed on Chinese medical anatomy and physiology.
- Crash course in diagnostics and treatment – you too can think like a teAm practitioner.
- Bringing something like the teAm mindset (IM of any kind) immediately to your patient care.

# Non-specific vs. Specific Components



This is where I have to go a bit philosophic, because though I've told you a bit about acupuncture, I can't give out needles and encourage you to adopt this in clinic tomorrow.

I'd suggest that acupuncture – and the model I just showed you – can be a metaphor for whatever integrative medicine modality you are drawn to.

If you are not already proficient in that modality, it'll take not very much training or tutelage to get you to a place where you can practice it safely and effectively.

It doesn't matter what "technique" in particular represents your lower right quadrant practice. If it is diet therapy like (x) presented on, use it. If movement therapy similar to what Michele presented, or if is some of the botanical medicines that Dr Hand spoke about last month.

The ECHO format of these lectures is similar in spirit to the "see one, do one, teach one," model of medical education.

Regardless of what particular modality you choose, having that extra tool makes you a bit of a jackknife for those patients who are not responding or not being served best by the more traditional biomedical interventions you find at DH.

I would suggest that by thinking about that recalcitrant condition or challenging patient with the IM mindset, the off-the-beaten path diagnostic and treatment framework, you're opening a new door for those folks. And a more diverse skill set for you as a clinician. This is expanding the upper right quadrant for you quite a bit. You're going to go back to Danny, the 16 y-o, and explain to them that a pint of ice cream every night before bed is like putting a damp wool blanket on your stomach's digestive fire, and all that cold, heavy, sticky sludge sinks right through your intestines and pushes the trap door open. That's why he has loose stools every morning. And if you explain it to him like that, he might make some lifestyle changes.

# the ordinary states of consciousness

- Activities
  - Driving
  - Laundry
  - Making lunch
  - Checking email
  - Studying, working
  - Jazzercise class
- Mindset
  - Alert and oriented
  - Ego in effect
  - Cognizant of DOB, beliefs, level of education, etc. etc.
  - Participating in ADLs

# non-ordinary states of consciousness

- Mindset
  - “Light trance state”
  - In touch with precognitive or intuitive self
  - Heightened sensitivity to self, others, world at large
  - Sense of peace or contentment
  - Able to interact normally and come back to ordinary state of consciousness easily

# *WELCOME to the*

## Pediatric Integrative Medicine ECHO: Changing Health Care for Children

*Session 8, October 19, 2023*

### Today's Program:

- Brief housekeeping
- Didactic: Manual Medicine
  - Matt Hand
- Case Presentation:
- Case Discussion
- Summary
- Up Next

### Notes:

- Enter name, organization into chat
- Raise virtual hand or enter comments in chat at any time. We will call on you when it works. Please mute otherwise.
- To protect individual privacy, please use non-identifying information when discussing cases.
- We will be recording the didactic part of these sessions. *Participating in these session is understood as consent to be recorded. Thank you!*
- Closed Captioning will be enabled during sessions
- [Submit cases](#)

# Manual Medicine In Pediatric Care

Matthew Hand DO

Section Chief, Pediatric Nephrology and Integrative  
Medicine

Children's Hospital at Dartmouth/Dartmouth Health  
**Children's**



# Disclosure

- ▶ Davinci Labs/FoodScience/Little Davinci
  - ▶ Medical advisory board, speakers board, consultant

# What Is Manual Medicine?

- ▶ Massage
- ▶ Physical Therapy
- ▶ Chiropractic
- ▶ Therapeutic touch
- ▶ Acupressure
- ▶ Osteopathic manipulation

# Massage

- ▶ Multiple different techniques
  - ▶ Swedish, Bodywork (craniosacral, lymphatic work, Rolfing, Shiatsu etc), Deep tissue, Stretches, Muscle energy etc
- ▶ Credentialling/How to evaluate
  - ▶ Variable from state to state
  - ▶ AMTA, NCBTMB, Accredited schools

# Chiropractic

- ▶ Founded in 1895 by DD Palmer
- ▶ Idea on how the structure of the body impacts health
  - ▶ Subluxation: malalignment of spine
  - ▶ Innate intelligence: healing ability and improving through alignment
- ▶ Quite a bit of variability from provider to provider
- ▶ Credentialling/Licensing
  - ▶ Licensing and what is allowed varies from state to state
  - ▶ Some allow more supplements, other recommendations beyond manipulation.

# What is Osteopathic Manipulation?

- ▶ OMT: Hands-on treatment
- ▶ Founded by a physician, Andrew Taylor Still in 1874.
- ▶ Belief: body functions best when it is aligned in a normal structural relationship.
- ▶ In addition to all other aspects of modern medicine, OMT is taught to physicians who attend osteopathic medical schools
- ▶ Infants: very gentle manipulation of the muscles and bones.

- ▶ Myofascial release
- ▶ Soft tissue
- ▶ Deep tissue
- ▶ Muscle energy
- ▶ Counter strain
- ▶ High velocity Low amplitude

# Infant Massage

- ▶ Multiple studies showing benefits in newborns/neonates/premature infants
- ▶ Has demonstrated improve weight gain, earlier DC, and improved parasympathetic response.
- ▶ Multiple factors
  - ▶ increased insulin
  - ▶ Increased IGF-1
  - ▶ Increased vagal activity
  - ▶ Improved gastric motility.

# Heart Rate Variability (HRV)

- ▶ Heart rate and rhythm are largely under the control of the autonomic nervous system.
- ▶ The parasympathetic influence on heart rate is mediated via release of acetylcholine by the vagus nerve.
- ▶ Baseline function is based on parasympathetic response, fluctuation with sympathetic impact.
- ▶ HRV: Change measured between beats.
- ▶ Demonstration



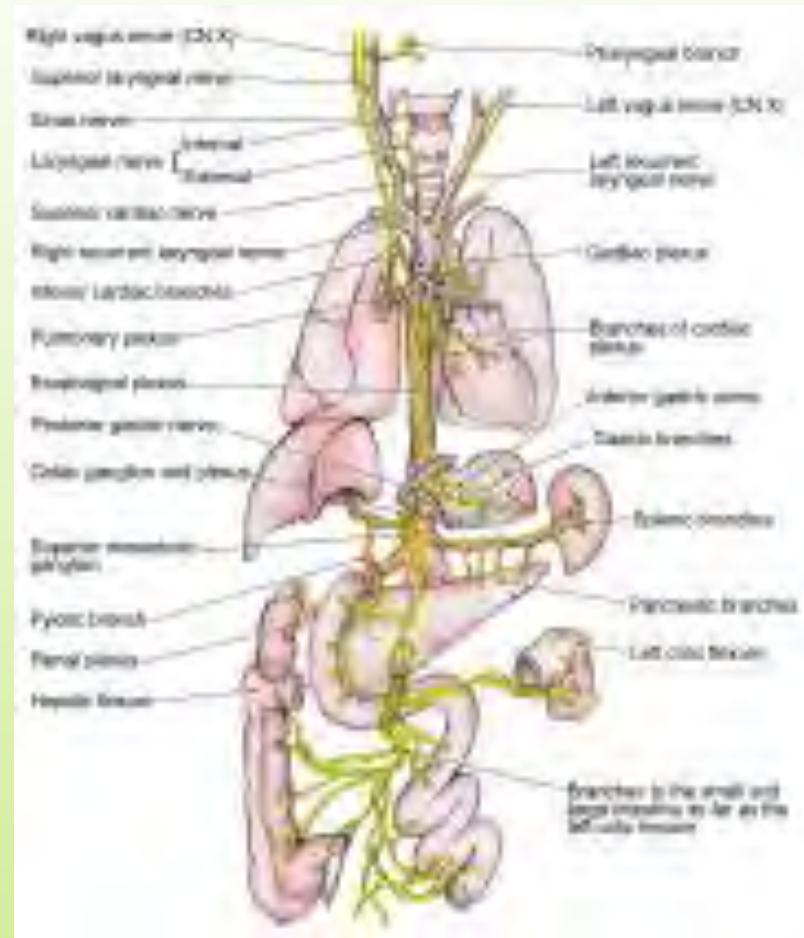
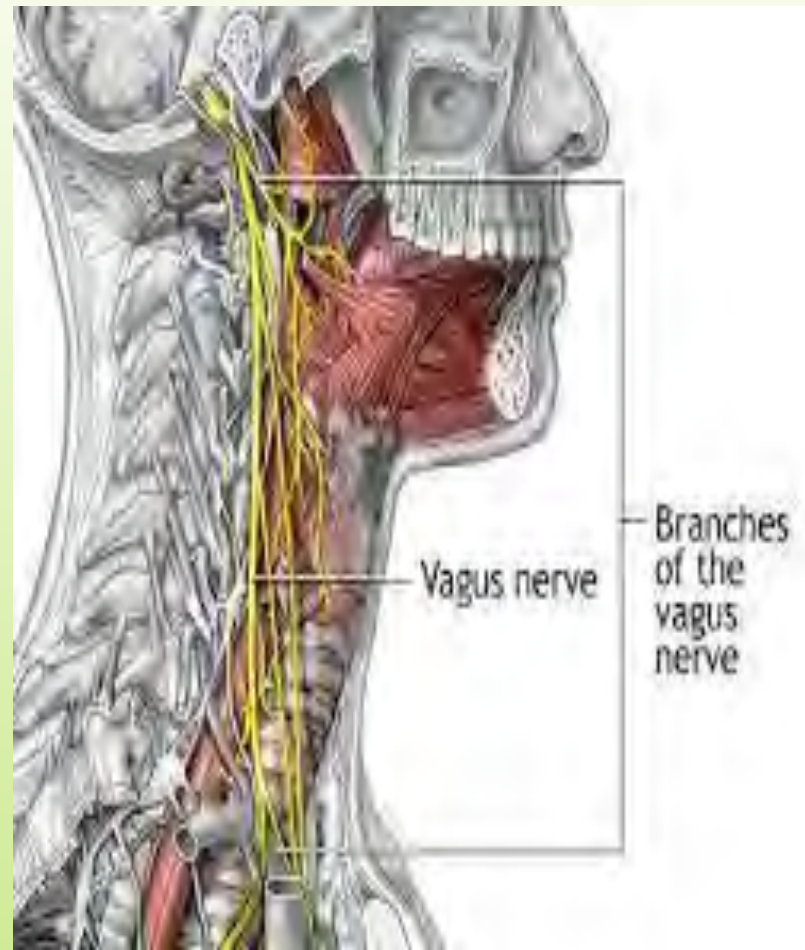
# Vagus Nerve: ? The key

- ▶ Key component
  - ▶ regulation of the autonomic nervous system
  - ▶ socioemotional function
  - ▶ Afferent (sensory), efferent (motor) fibers
- ▶ Innervates
  - ▶ Gastrointestinal
  - ▶ Cardiovascular
  - ▶ Ears, mouth and voice
    - ▶ (Chang, Mashimo & Goyal, 2003; Kandel, Schwartz & Jessel, 2000).
- ▶ Heart rate variability:
  - ▶ Estimate vagal activity
  - ▶ Noninvasive measure of autonomic nervous system function
  - ▶ Reflects vagal regulation Cardiac and GI systems
    - ▶ (Fox & Porges, 1985; Katoh, Nomura, Iga, Hiasa, Uehara, Harada et al., 2003; Task Electrophysiology, 1996).

- ▶ Vagal activity from heart rate variability used to study infant development, affect, social interactions.
- ▶ Low vagal activity: found in depressed mothers and their infants
  - ▶ (Field, Diego, Dieter, Hernandez-Reif, Schanberg, Kuhn, Yando & Bendell, 2004; Jones, Field, Fox, Lundy & Hart, 1998)
- ▶ Depressed mothers: lower vagal tone than non-depressed mothers, greater relative right frontal EEG activation-Their newborns with lower vagal tone and greater right frontal EEG activation
  - ▶ Field et al. (2004)

- ▶ Same studies: lower vagal activity was significantly correlated with elevated cortisol and lower levels of serotonin and Dopamine (moms and babies).
- ▶ Lower vagal activity: mothers who have high prenatal anxiety levels and prenatal anger.
- ▶ Women high or low anxiety during the second trimester of pregnancy
  - ▶ High anxiety women: high scores on depression and anger scales, lower postnatal vagal activity, greater relative right frontal EEG activity, elevated prenatal norepinephrine, low dopamine in prenatal period
  - ▶ Newborns: lower vagal activity, lower dopamine and serotonin levels, greater relative right frontal EEG activation

- ▶ High anger mothers: low vagal tone, high prenatal cortisol and epinephrine, low dopamine and serotonin levels
- ▶ Mimicked by their neonates
  - ▶ (Field, Diego, Hernandez-Reif., Salman., Schanberg., Kuhn, Yando & Bendell, 2002-2003)



# Infant Massage

- ▶ Low vagal tone: therapies that enhance vagal activity-massage therapy
  - ▶ ( Field, Diego, Hernandez-Reif, 2006).
  - ▶ Increased vagal activity with massage therapy
    - ▶ (Diego et al., 2005; Lee,2005).
  - ▶ Also used with depressed adults
    - ▶ (George M et al2000).

# OMM

- ▶ Myofascial release
- ▶ Soft tissue
- ▶ Deep tissue
- ▶ Muscle energy
- ▶ Counter strain
- ▶ High velocity Low amplitude (not in the newborns!)

# Experience

- ▶ Significant improvement noted by PT with babies treated with OMM
- ▶ Significant improvement in oral feeding and in particular breast feeding (hypoglossal/glossopharyngeal nerve and hyoid bone)
- ▶ Improvement in irritability in chronic condition babies
- ▶ Improvement in NAS scores (particularly the more severe babies)



# Treatment

- ▶ Based on babies position (IE can they be picked up)
- ▶ Start low on legs and hips, gentle movement of strain patterns as tolerated by the baby.
- ▶ Position in head flexed position
- ▶ Work up back for gentle positioning based on strain patterns
- ▶ Gentle chest wall movements for improved rib movement
- ▶ Sub-occipital release!!
  - ▶ May be the key.

# Safety

- ▶ A number of reviews
- ▶ Adults: Hurwitz 1996
  - ▶ Stroke 5-10 for 10,000,000 treatments
  - ▶ Impairment 3-6 per 10,000,000 treatments
  - ▶ Death <3 per 10,000,000 treatments
  - ▶ Most revolved around HVLA/HVHA in high risk patients (conflicting reports)
  - ▶ Some say under reported
- ▶ Children
  - ▶ Vohra et al in 2007 looked at 13 studies. 14 cases of significant injury. Subsequent study said rare complications
  - ▶ Review of the events showed the children most had primary issues that should have limited cervical manipulation

# *WELCOME to the*

## Pediatric Integrative Medicine ECHO: Changing Health Care for Children

*Session 9, December 5, 2023*

### Today's Program:

- Brief housekeeping
  - Didactic: Anxiety/Depression: Matt Hand
- Case Presentation:
- Case Discussion
- Summary
- Up Next

### Notes:

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# Integrative Medicine in Pediatric Mental Health ECHO: Anxiety/Depression

Matthew Hand DO

Section Chief, Pediatric Nephrology and  
Integrative Medicine

Children's Hospital at Dartmouth/Dartmouth  
Health Children's

Clinical Assistant Professor, Geisel Medical School



# Disclosures

Davinci/FoodScience/Little Davinci: Medical advisor






# My Thoughts

- ▶ Overwhelmed by mental health issues
- ▶ Numbers hard to know but so extensive it seems like everyone is dealing with something
- ▶ Part of all conditions to some degree or another.
- ▶ “Genes load the gun, environment pulls the trigger”. Can we modify both?
- ▶ Lets delve into the triggers
- ▶ Take all of this and increase it since COVID started
- ▶ For those of us that do this, COVID unmasked it but we knew it was there.



# So lets look at some of what's out there: IE what are the triggers.

- ▶ Bullying: CDC-unwanted aggressive behavior; observed or perceived power imbalance; and repetition of behaviors or high likelihood of repetition.
  - ▶ Highly discussed in the media.
  - ▶ Multiple, highly publicized cases
- ▶ Internet sites on bullying:
  - ▶ Reports of about 1 in 7 school kids are bullied
  - ▶ 1 of every 10 students drops out or changes schools because of repeated bullying.
  - ▶ 15 percent of all students who don't show up for school report it to being out of fear of being bullied while at school
  - ▶ 2.7 million students being bullied each year
  - ▶ School bullying statistics including cyberbullying report about one in four kids impacted
  - ▶ Around half of teens have been the victims of cyber bullying

- 
- ▶ 28% of U.S. students in grades 6–12 experienced bullying. 20% of U.S. students in grades 9–12 experienced bullying.
  - ▶ Approximately 30% of young people admit to bullying others in surveys.
  - ▶ 70.6% of young people say they have seen bullying in their schools. 70.4% of school staff have seen bullying. 62% witnessed bullying two or more times in the last month. 41% witness bullying once a week or more. When bystanders intervene, bullying stops within 10 seconds 57% of the time.
  - ▶ 9% of students in grades 6–12 experienced cyberbullying. 15% of high school students (grades 9–12) were electronically bullied in the past year.

Stopbullying.gov





# Impact

- Bullying associated with
  - ADHD
  - Personality disorder
  - Anxiety
  - Depression
  - Substance use
  - Offline victimization
  - Aggression
  - Anger

Psychiatric conditions associated with bullying.

[Kumpulainen K](#)

The co-occurrence of Internet harassment and unwanted sexual solicitation victimization and perpetration: associations with psychosocial indicators.

[Ybarra ML](#)<sup>1</sup>, [Espelage DL](#), [Mitchell KJ](#).



# Electronics



- ▶ The bane of my existence as an integrative doc and father (along with school systems)
- ▶ Taken as a whole can include TV, video games, computer games, internet, cell phones, etc and all of them together on one device!
- ▶ Variable studies on impact
- ▶ What I see is a profound impact on children influencing almost every aspect of kids lives.
- ▶ “try and take away and see response”



# 4 Components of an Internet/Videogame Addiction

- Negative Consequences – The use of the internet or technology has negatively affected quality of life. Some examples would be - deteriorating social relationships, social isolation, poor work or school performance and arguments about time spent online.
- Excessive time spent online – Most internet addicts will spend a great deal of time online, will lose track of time while surfing, and will forget to meet basic needs such as for sleep or food, while on the internet.
- Tolerance – A need to spend more time online to feel satisfied. Also, a preoccupation with acquiring new and better technology or software.
- Withdrawal – Feeling irritable, depressed or angry when they cannot be online.

➤ [Choosehelp.com](http://Choosehelp.com)



# Gaming

- ▶ Pathologic Gaming: Not sure exactly what this means but essentially is describes videogame/internet addiction. Experts recommend differentiating from “strong engagement”
- ▶ Difficult to know, most info is self reported studies  
Prevalence : 9-10%
- ▶ Depression, anxiety, social phobias, and lower school performance : outcomes of pathological gaming

[Pediatrics](#). 2011 Pathological video game use among youths: a two-year longitudinal study.

[Khoo A](#) et al



# Studies on impact of video game use

- ▶ Amount of time spent on video games is associated with
  - ▶ Higher levels of depression (Lemona et al., 2011), (Gentile et al., 2011; Mentzoni et al., 2011),
  - ▶ Lower academic achievement (Anand, 2007; Gentile, Lynch, Linder & Walsh, 2004) (Skoric, Teo & Neo, 2009)
  - ▶ Increased alcohol consumption (Ream, Elliott & Dunlap, 2011)
  - ▶ Conduct problems (Holtz & Appel, 2011) (Rehbein, Kleinmann, Mediasci & Möble,)
- ▶ Good review: J behav addiction 2014, Froyland, L et al
- ▶ Television and video game exposure and the development of attention problems." Walsh DA et al. *Pediatrics* Aug, 2010
- ▶ Other studies without the same findings, difficult to evaluate



# School


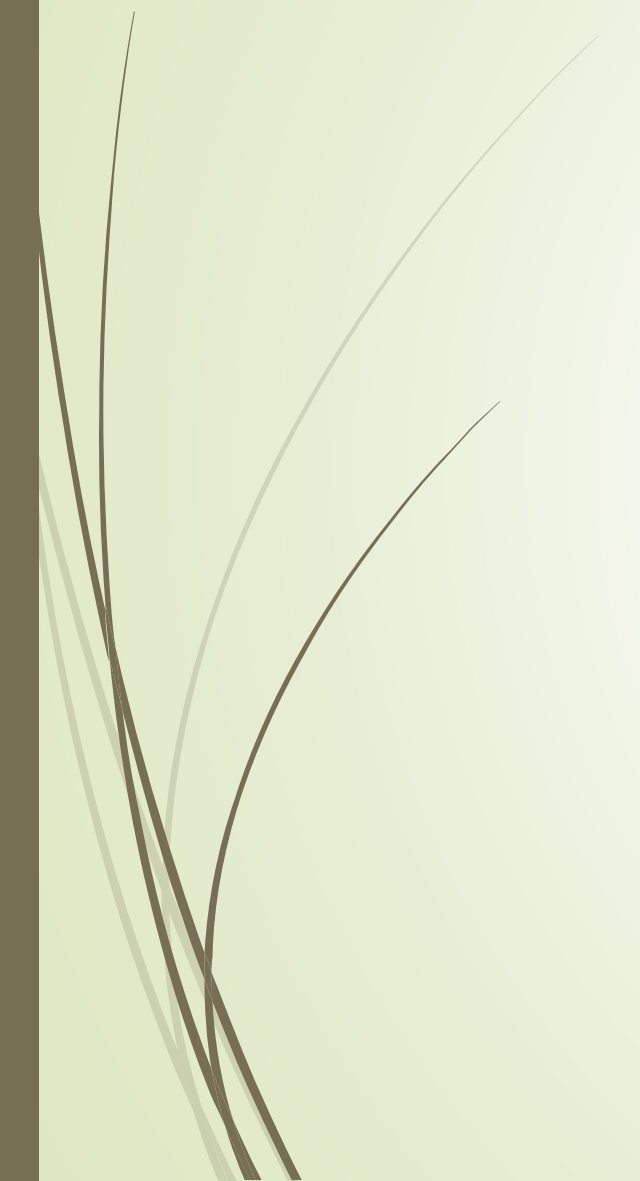


- By far the single greatest stressor on almost every child I see.
- Academics, social interactions, homework, sports etc
- Very often patients and family state “it can’t be school, they/I love school”
- Dramatic “denial” is the best way to describe it.
- Very common in high performing students
- I found it hard to find studies that address the process, more focused on patient/student issues.
- I admit I am biased: hated school-“legislated child abuse” 😊




# Common scenarios

- ▶ 15 year old female
  - ▶ “Excellent student, loves school”-Her whole life her image was formed by being a good student
  - ▶ Headaches started about 4 years ago –start of middle school- and last year became unbearable-start of high school.
  - ▶ Wakes with headaches every day, improved by late afternoon, becomes worse again at night.
  - ▶ Still gets work done at home.
  - ▶ Tries to go back to school but headache worse
  - ▶ Overweight
  - ▶ Starts to get “panicky” when discussing returning to school.
  - ▶ Mom feels school doesn’t understand
  - ▶ Work up negative

- 
- 
- ▶ Associated nausea, abd pain, dizziness and fatigue
  - ▶ “Can’t be school, must be MSG”
  - ▶ Now homeschooled.
  - ▶ Can’t sleep-cell phone in the room-“doesn’t use it at night” but panics and absolute refusal to remove it from the room.
  - ▶ About 10-14 hours a day of electronics



- 
- ▶ 15 year old male
    - ▶ ADD
    - ▶ “very smart but can’t focus”
    - ▶ Abdominal pain and headache every day and night.
    - ▶ ?Lyme/chronic lyme
    - ▶ Marked anxiety
    - ▶ Poor social interactions.
    - ▶ Refuses exercise
    - ▶ Video game/tv/electronics 12-16 hours per day
    - ▶ COD, Mind craft
    - ▶ Can’t sleep so has to be on electronics, fatigued all day and not sure why.
    - ▶ Craves carbohydrates
    - ▶ Hasn’t been to school consistently in 2 years because of his “medical problems”

# How much is out there?

- ▶ Over 60 billion dollars a year on anxiety disorders!
- ▶ Economic burden of anxiety disorders : 1998 was \$63.1 billion, including direct health care costs, indirect costs such as lost wages caused by missed work, decreased work productivity, increased medical morbidity, and suicide (Langlieb, 2005).
- ▶ Anxiety disorders: lifetime prevalence of 25.1% in 13-18 year olds
- ▶ ~ 40 million American adults age 18 years and older (about 18%) with anxiety disorder in a given year.
- ▶ **2023: Federal data Census Bureau's Household Pulse Survey: 50% 18-24 year old's report anxiety and depression symptoms, Adol females: 57% hopelessness + sadness, ~30% of males (Kaiser Foundation)**



# So what happens with stress/anxiety

- ▶ Stress response:
  - ▶ Change in glucocorticoids, catecholamines, IL6
  - ▶ Impacts
    - ▶ Cognitive function, fear, anger, wake-sleep, thyroid axes GI, CV and immune response
  - ▶ Metabolic/Immune responses:
    - ▶ Corticotropin RH, stimulate gluconeogenesis, hepatic glucose secretion
    - ▶ Impact on TH-1 and th-2
      - ▶ "Stress and disorders of the stress system." Chrousos GP. *Nature reviews. Endocrinology* 5(7):374-81 Jul, 2009



# Stress in Chronic conditions

- ▶ Primary Cause of headaches
- ▶ Highly associated with abdominal pain
- ▶ Autoimmune conditions and long term symptoms
  - ▶ Clin Exp Rheum 2012. Autoimmune rheumatic disease associated symptoms in fibromyalgia patients and their influence on anxiety, depression and somatisation: a comparative study.
- ▶ Abdominal pain and IBD
  - ▶ J Clin Psychv2001; Depression, anxiety, and the gastrointestinal system. Naliboff BD et al



# Depression:

- ▶ Important public health issue in the United States estimated total annual cost of \$247 billion.
- ▶ A total of 13%-20% of children living in the United States experience a mental disorder in a given year
- ▶ Surveillance during 1994-2011: prevalence increasing.
- ▶ Suicide: second leading cause of death among children aged 12-17 years in 2010.
  - ▶ Mental health surveillance among children--United States, 2005-2011. Huang LN et al, Centers for Disease Control and Prevention (CDC) MMWR Surveill Summ. 2013;62 Suppl 2:1.

# Conditions associated with stress

"Stress and disorders of the stress system." Chrousos GP. *Nature reviews. Endocrinology* 5(7):374-81 Jul, 2009

## Acute

- Allergic reactions
- Asthma
- Eczema
- Fear reactions
- Hypertension
- Indigestion (constipation, diarrhea)
- Migraine
- Pain
- Panic attacks
- Psychosis
- Urticarial

## Chronic

- Anxiety
- Autoimmune disorders
- Behavioral maladjustment (poor planning and decision making)
- Cardiovascular disease
- Cognitive dysfunction
- Depression
- Growth delay
- Irritable bowel syndrome
- Loss of libido
- Metabolic disorders (obesity, metabolic syndrome, type-2 diabetes)
- Neurovascular degenerative disease
- Osteopenia
- Polycystic ovarian syndrome
- Reduced fertility
- Sleep disorders



# So What Can We Do

- ▶ Address the issue
  - ▶ Always assume stress plays a role, how can it not.
  - ▶ Don't be afraid to recommend Modalities
- ▶ Modalities
  - ▶ Biofeedback
  - ▶ Guided imagery
  - ▶ Hypnosis (self-hypnosis)
  - ▶ Numerous forms of meditation and deep relaxation (MBSR, PMR, breath work)
  - ▶ Mindfulness in all we do (eat, drink, sleep, exercise etc)
  - ▶ Supplements/herbals



# Moving Meditation

- ▶ Yoga

- ▶ Tai Chi

- ▶ "Effects of yoga and meditation on clinical and biochemical parameters of metabolic syndrome.", Agrawal RP. *Diabetes research and clinical practice* 2007
- ▶ "Yoga and qigong in the psychological prevention of mental health disorders: a conceptual synthesis Glass N et al *Chinese journal of integrative medicine* 2010
- ▶ Qigong for schoolchildren: a pilot study. *J Alt Comp Med* 2005
- ▶ "Yoga as a Complementary Treatment of Depression: Effects of Traits and Moods on Treatment Outcome, Abrams M. et al *Evidence-based complementary and alternative medicine* 2007
- ▶ NIH: > 40 research trials on the effects of yoga in patients with hypertension, stroke, irritable bowel syndrome, PTSD, cystic fibrosis, asthma, depression and chronic pain





# Yeah but does it Work?


- ▶ The ancients thought so
- ▶ Almost all cultures include mind body therapies in their treatments
  - ▶ TCM: Tai chi/ Chi Kung, breath work
  - ▶ Ayurveda: yoga, breath work
  - ▶ American Indian: Sweat lodges, breath work
- ▶ Almost all teach some form of breath work.
- ▶ Historically the mind was closely connected to the body
- ▶ Our Western beliefs focused on reduction theory and thus the brain/mind was considered separate.



# Can we change our Brain: Neuroplasticity

- ▶ Neuroplasticity refers to structural and functional changes in the brain that are brought about by training and experience. The brain is the organ that is designed to change in response to experience. Neuroscience and psychological research over the past decade on this topic has burgeoned and is leading to new insights about the many ways in which the brain, behavior and experience change in response to experience. This basic issue is being studied at many different levels, in different species, and on different time scales. Yet all of the work invariably leads to the conclusion that the brain is not static but rather is dynamically changing and undergoes such changes throughout one's entire life. "

—Mind-Life Institute



Stress reduction correlates with structural changes in the amygdala." Holzel BK, Carmody J, Evans KC, Hoge EA, Dusek JA, Morgan L, Pitman RK, Lazar SW. *Social cognitive and affective neuroscience* 5(1):11-7 Mar, 2010

- ▶ Amygdala as a brain structure crucial in stress responses.
- ▶ Hyperactive amygdala function observed during stress conditions
- ▶ MRI study: relationship between changes in perceived stress with changes in amygdala gray matter density following a stress-reduction intervention.
- ▶ Stressed healthy individuals (N = 26) ,8-week mindfulness-based stress reduction intervention.
- ▶ Perceived stress was rated on the perceived stress scale (PSS)
- ▶ Anatomical MR images were acquired pre- and post-intervention. Following the intervention, significantly reduced perceived stress.
- ▶ Reductions in perceived stress correlated positively with decreases in right basolateral amygdala gray matter density.
- ▶ Neuroplastic changes are associated with improvements in a psychological state variable.




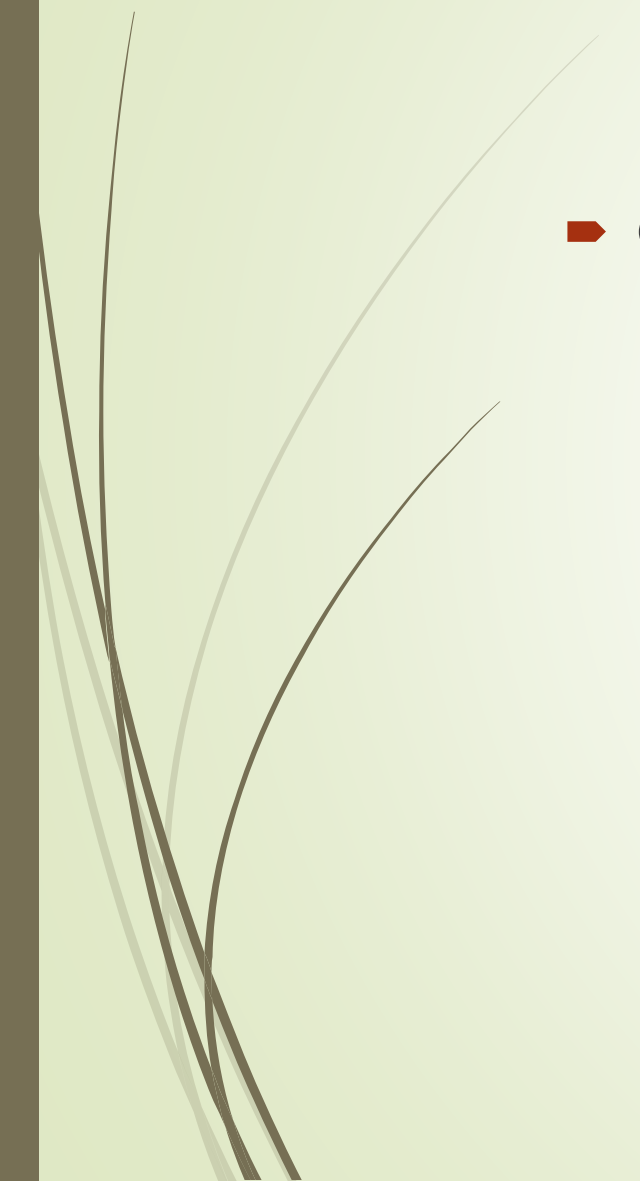
# Can we change our genes

- ▶ Shortening of the telomere (nucleoprotein end caps on chromosomes) increased vulnerability of aging cells to DNA damage and dysregulation
- ▶ Shortened telomeres may lead to inadequate replacement of damaged or dead cells from their respective precursor cell populations, IE aging.
- ▶ Studies show stress life style changes can directly impact telomerase activity, thus improving telomere function.
  - ▶ Lancet Onc 2008. Increased telomerase activity and comprehensive lifestyle changes: a pilot study. Ornish D, et al
  - ▶ Lancet Onc 2013 Effect of comprehensive lifestyle changes on telomerase activity and telomere length in men with biopsy-proven low-risk prostate cancer: 5-year follow-up of a descriptive pilot study. Ornish D, et al
  - ▶ Orv Hetil 2010 The 2009 Nobel Prize in Medicine and its surprising message: lifestyle is associated with telomerase activity]. Falus A.



# Relaxation response

- Two steps are usually required to elicit the relaxation response:
- Repetition: The repetition of a word, sound, prayer, phrase or muscular activity.
- Passive Return: When thoughts unexpectedly intrude, there is a passive return to the repetition.
- The relaxation response counters the harmful effects of the stress response, referred to as allostatic loading

- 
- 
- ▶ Gene analysis of 20 subjects and 20 controls
    - ▶ Subjects did RR
    - ▶ Showed alterations in cellular metabolism, oxidative phosphorylation, generation of reactive oxygen species and response to oxidative stress

"Genomic counter-stress changes induced by the relaxation response." Libermann TA. et al. *PloS one* 3(7):e2576 2008



# Mindfulness



- ▶ Meta-analysis:
  - ▶ 39 studies- 1,140 subjects
  - ▶ Mindfulness therapy for anxiety, depression and other medical and mental health conditions.
  - ▶ Improvement of symptoms for those with anxiety and depression
  - ▶ Mindfulness-based therapies were noted to be a promising intervention with minimal downside
    - ▶ ( Hofmann, 2010; Vollestad, 2011).

# Botanical Boot Camp for Calming the Mind

Note: As was discussed in a previous session of our ECHO program, Supplements and Botanicals are not regulated by the FDA. The current presentation offers an overview of supplements/botanicals but cannot cover all the data/references related to individual therapies. It can also not cover all the side effects/benefits/drug-herb interactions related to the individual treatments. For more detailed look at these areas we would refer you back to the ECHO on “Botanical Bootcamp” and the following independent reviewers:

- Natural Medicine Comprehensive Database
- United States Pharmacopia
- ConsumerLabs.com
- NSF





# Anxiety

- ▶ L-theanine: amino acid from green tea
  - ▶ "L-Theanine: properties, synthesis and isolation from tea." Roach PD et al *Journal of the science of food and agriculture* 2011
  - ▶ L-theanine relieves positive, activation, and anxiety symptoms in patients with schizophrenia and schizoaffective disorder: an 8-week, randomized, double-blind, placebo-controlled, 2-center study." Lerner V et al. *J Clin Psychiatry*. 2011
  - ▶ "Time for tea: mood, blood pressure and cognitive performance effects of caffeine and theanine administered alone and together." Pleydell-Pearce CW et al. *Psychopharmacology (Berl)*. 2008



- Valerian

- 2-6 grams per day
  - "A combination of valerian and lemon balm is effective in the treatment of restlessness and dyssomnia in children." Muller SF, Klement S. *Phytomedicine : international journal of phytotherapy and phytopharmacology* 2006
  - "Treating depression comorbid with anxiety--results of an open, practice-oriented study with St John's wort WS 5572 and valerian extract in high doses." von den Driesch V et al. *Phytomedicine : international journal of phytotherapy and phytopharmacology* 2003
- Smells bad



- 5-htp+L tryptophan

- precursors for serotonin synthesis

- Small studies with potential benefit

- "Effects of tryptophan depletion on carbon dioxide provoked panic in panic disorder patients." Griez E et al. *Psychiatry research* 2000

- 25-400mg per day

- Lemon balm

- Mint family, commonly combined with Valerian

- Most studies done in Germany,

- Modulation of mood and cognitive performance following acute administration of *Melissa officinalis* (lemon balm)."


- Wesnes KA et al. *Pharmacology, biochemistry, and behavior* 2002

- ? Increased anxiety at higher doses



# CBD

- ▶ Extremely hot topic
- ▶ Almost all patients' parents asking
- ▶ Mechanism of action
  - ▶ Counterbalance of THC, potentiate the effect
  - ▶ Potentiate endocannabinoids
  - ▶ May impact GABA receptors (particularly related to anxiety and PTSD)
- ▶ Blessing 2015: review “existing preclinical evidence strongly supports CBD as a treatment for generalized anxiety disorder, panic disorder, social anxiety disorder, obsessive–compulsive disorder, and post-traumatic stress disorder when administered acutely; however, few studies have investigated chronic CBD dosing. Likewise, evidence from human studies supports an anxiolytic role of CBD, but is currently limited to acute dosing, also with few studies in clinical populations.”

- 
- ▶ Our anecdotal experience
    - ▶ Marked improvement in behaviors reported by teachers and parents.
    - ▶ Dosing unclear 2.5-50+ mg
    - ▶ Commonly dosed 2-3 times a day



- Hops

- Numerous studies with valerian combinations. Small numbers per study but effective

- Chamomile

- Believed to be helpful, small human studies

- Safe



# Depression

## ▶ Omega 3s

- ▶ A number of meta-analyses/systematic reviews evaluating the effectiveness of omega-3 fatty acids in depression
  - ▶ "A meta-analytic review of double-blind, placebo-controlled trials of antidepressant efficacy of omega-3 fatty acids." Su KP et al *The Journal of clinical psychiatry* 2007
  - ▶ Omega-3 fatty acids: evidence basis for treatment and future research in psychiatry." Freeman MP, Hibbeln JR, Wisner KL, Davis JM, Mischoulon D, Peet M, Keck PE, Marangell LB, Richardson AJ, Lake J, Stoll AL. *The Journal of clinical psychiatry* 67(12):1954-67 Dec, 2006
  - ▶ Efficacy of omega-3 fatty acids in mood disorders - a systematic review and metaanalysis. Unal SS et al
- ▶ More recent meta-analysis of 15 trials involving 916 subjects suggests that omega-3 fatty acid supplement with EPA greater or equal to 60 percent of total EPA and DHA showed highest benefit against primary depression



## ▶ Vit D

- ▶ Association in adults with vit D def and mood disorder
  - ▶ "Some new food for thought: the role of vitamin D in the mental health of older adults." Roos BA et al, Levis S. *Current psychiatry reports*, 2009
  - ▶ Association between low serum 25-hydroxyvitamin d and depression in a large sample of healthy adults: the cooper center longitudinal study." Brown ES et al. *Mayo Clin Proc.* 2011
- ▶ ? Proper level
  - ▶ Roughly 400-800 U when little, 1000 U when older, 2000 Units adolescents.
- ▶ Smaller study not as helpful-not depressed, Australia
  - ▶ "Effects of vitamin d supplementation on cognitive and emotional functioning in young adults - a randomized controlled trial." McGrath JJ et al. *PLoS One.* 2011





- ▶ SAMe: serotonin precursor

- ▶ A meta-analysis of placebo-controlled studies on SAMe in depressed mood confirms efficacy and safety equivalent to conventional anti-depressants
  - ▶ "St. John's wort and S-adenosyl methionine as 'natural' alternatives to conventional antidepressants in the era of the suicidality boxed warning: what is the evidence for clinically relevant benefit?" Carpenter DJ. *Altern Med Rev.* 2011
- ▶ Patients not responded/partially responded conventional antidepressants, titrating SAMe 800mg to 1600mg/day improves response rate of clinical improvement
  - ▶ "S-adenosyl-L-methionine (SAMe) as an adjunct for resistant major depressive disorder: an open trial following partial or nonresponse to selective serotonin reuptake inhibitors or venlafaxine." , Fava M et al. *Journal of clinical psychopharmacology* 2004
- ▶ Expensive, commonly use 200-400 mg



- ▶ St johns wort

- ▶ 29 trials (5489 patients)

- ▶ 18 with placebo

- ▶ 17 standard antidepressants


- ▶ Conclusion: St. John's wort (SJW)

- ▶ superior to placebo in patients with major depression

- ▶ are similarly effective as standard antidepressants

- ▶ have fewer side effects than standard antidepressants

- ▶ "[St. John's wort for depression--development of a Cochrane review from 1993 to 1996]"  
Linde K Cochrane Review 1993-1996 *Zeitschrift für Evidenz, Fortbildung und Qualität im Gesundheitswesen* 2008

- 
- ▶ Ten placebo-controlled studies
    - ▶ Equivalent efficacy to tricyclic anti-depressants
    - ▶ 3 studies equivalent efficacy to SSRIs: fluoxetine, sertraline, and paroxetine
      - ▶ "Equivalence of St John's wort extract (Ze 117) and fluoxetine: a randomized, controlled study in mild-moderate depression." Schrader E. *International clinical psychopharmacology* 2000
      - ▶ "Effect of Hypericum perforatum (St John's wort) in major depressive disorder: a randomized controlled trial." Hypericum Depression Trial Study Group *JAMA : the journal of the American Medical Association* 2002
      - ▶ "Acute treatment of moderate to severe depression with hypericum extract WS 5570 (St John's wort): randomised controlled double blind non-inferiority trial versus paroxetine." Kieser M et al. *BMJ* 2005
  - ▶ The dose is 900-1500 mg per day in 2-3 divided doses of an extract standardized to 0.3% hypericin and/or 3-5% hyperforin.



# Commonly used, but I don't use much, also part of the controversy for Kava

- ▶ Kava kava

- ▶ Member of the pepper family. Effective for treating anxiety, liver toxicity concern, thought to be carrier but possibly not
- ▶ 100-200 mg/day
  - ▶ "Kava: a comprehensive review of efficacy, safety, and psychopharmacology." Schweitzer I. et al. *Aust N Z J Psychiatry*. 2011
- ▶ Compared with placebo, kava extract appears to be an effective symptomatic treatment option for anxiety.
- ▶ Kava is relatively safe for short-term treatment (1 to 24 weeks)
  - ▶ "Kava extract for treating anxiety." Pittler MH, Ernst E. *Cochrane database of systematic reviews (Online)* CD003383 2003



## ➤ Inositol

- Part of B complex , for cell membranes. some studies show improvement
  - Double-blind, placebo-controlled, crossover trial of inositol treatment for panic disorder." Belmaker RH et al *The American journal of psychiatry* 1995
  - "Double-blind, controlled, crossover trial of inositol versus fluvoxamine for the treatment of panic disorder." Benjamin J. et al *Journal of clinical psychopharmacology* 2001
- Use powder, 2-6gms used



## Forty-Three

In ancient times, people lived holistic lives. They didn't overemphasize the intellect, but integrated mind, body, and spirit in all things. This allowed them to become masters of knowledge rather than victims of concepts. If a new invention appeared, they looked for the troubles it might cause as well as the shortcuts it offered. They valued old ways that had been proven effective, and they valued new ways if they could be proven effective. If you want to stop being confused, then emulate these ancient folk: join your body, mind, and spirit in all you do. Choose food, clothing, and shelter that accords with nature. Rely on your own body for transportation. Allow your work and your recreation to be one and the same. Do exercise that develops your whole being and not just your body. Listen to music that bridges the three spheres of your being. Choose leaders for their virtue rather than their wealth or power. Serve others and cultivate yourself simultaneously. Understand that true growth comes from meeting and solving the problems of life in a way that is harmonizing to yourself and to others. If you can follow these simple old ways, you will be continually renewed.

**Lao Tzu, Hua Hu Ching**



# Resources and references



# *WELCOME to the*

## Pediatric Integrative Medicine ECHO: Changing Health Care for Children

*Session 10, December 21, 2023*

### Today's Program:

- Brief housekeeping
- Didactic: Sleep Disturbances – JT Craig
- Case Presentation:
- Case Discussion
- Summary
- Up Next

### Notes:

- Enter name, organization into chat
- Raise virtual hand or enter comments in chat at any time. We will call on you when it works. Please mute otherwise.
- To protect individual privacy, please use non-identifying information when discussing cases.
- We will be recording the didactic part of these sessions. *Participating in these session is understood as consent to be recorded. Thank you!*
- Closed Captioning will be enabled during sessions
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*Sleep Disturbances*  
*JT Craig*

# Why Should You Care About Children's Sleep?



- Memory



- Ability to Regulate Emotions



- Ability to Learn and Retain New Information and New Patterns of Behavior



- Reason and Solve Problems Creatively



- Inhibit Impulses

# INSUFFICIENT SLEEP FOR MOST

- Large studies find that 62-75% of teens get less than 8 hours of sleep per night
  - Older teens most sleep deprived
  - Girls and African-American teens with most sleep deprivation
- 20-40% of children and adolescents experience a diagnosable sleep disorder at some point; 1 of every 4 teens served in the hospital
- As of 2020 the incidence of sleep deprivation among youth is getting over time

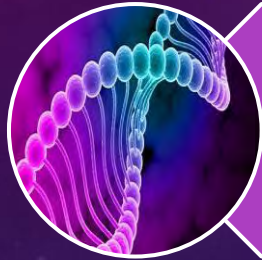
(Spuryt et al., 2011; Kansagra, 2020)

# HIGH COMORBIDITY

- Anxiety Disorders
  - 88% with 1 significant sleep problem (most often insomnia, nightmares, refusal to sleep alone)
  - 50% reported 3 or more sleep disturbances ASD
  - 86% of children with ASD have a comorbid sleep problem
- Depressive Disorders
  - 74% reported significant insomnia
- ADHD
  - 25-50% have significant sleep problems
- Children's sleep problems negatively affect parents' mental health and quality of intimate relationships, impacting the family system as a whole.

(Chorney, Detweiler, Morris, & Kuhn, 2007; Maski & Kothare, 2013)

# HOW DO SLEEP INTERVENTIONS WORK



Genetics and Chronotype



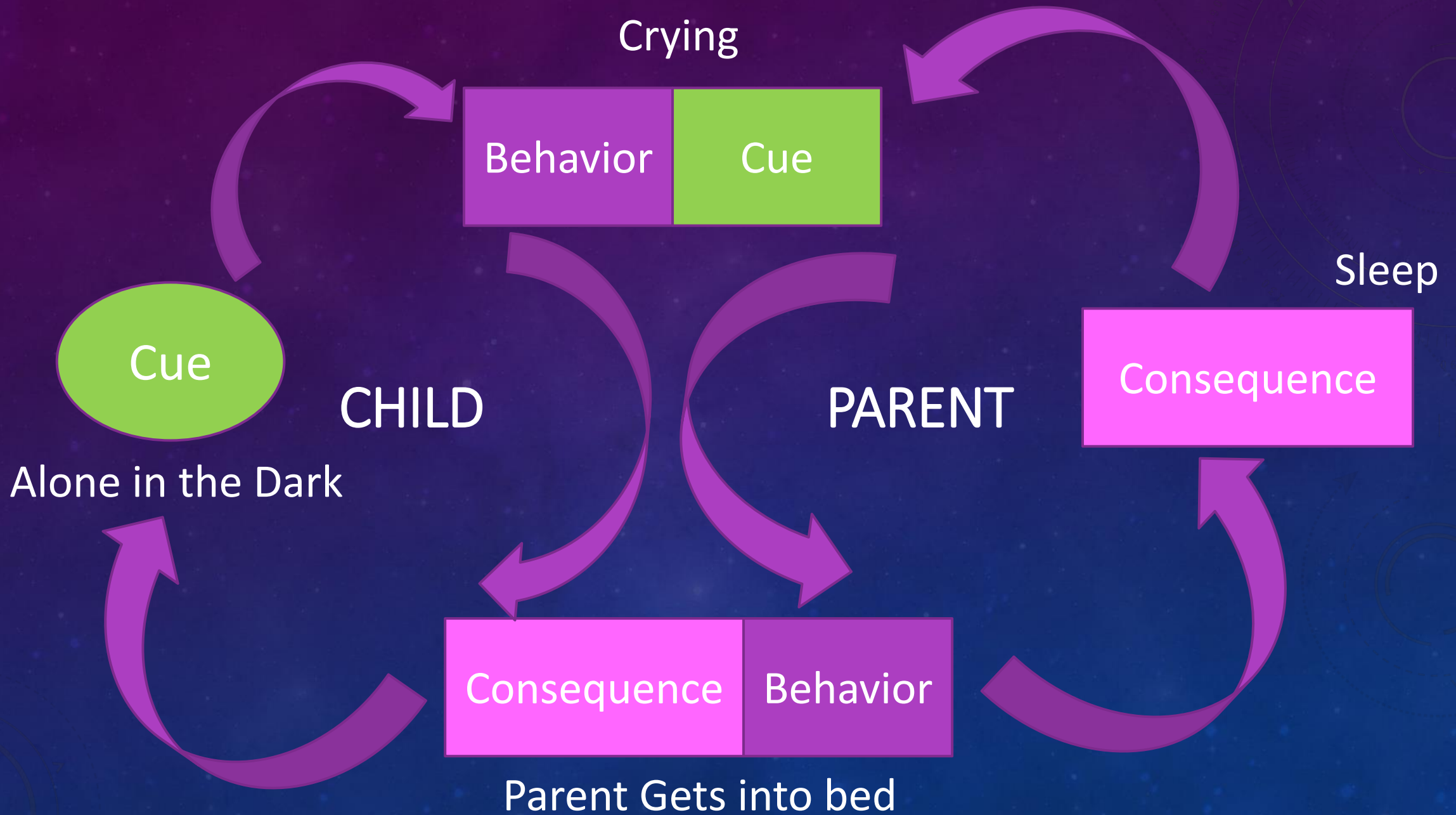
Inconsistent Homeostatic Sleep Drive  
(Bad Schedules)



Bad learning (Anxiety, Stress, Excitement  
and screens in Bed or at Bedtime)

# FUNCTIONAL ASSESSMENT FOR BEHAVIORAL SLEEP PROBLEMS

- A-B-Cs of sleep and sleep refusal behaviors (Operant Conditioning)
- Sleep resistant behaviors are **positively reinforced** via attention or access to privileges (TV, drink of water, reading, pets for the dog, food)
- Inappropriate sleep behaviors are **negatively reinforced** via the escape or avoidance of an unpleasant stimuli or mood state (e.g., dark, being alone, feeling scared, boredom)
- Extinction bursts occur with sleep resistant behaviors just like any other behavior
- Parents are stuck too. They are part of the disorder.



# CBT-I FOR ADOLESCENTS AND COMPONENTS OF CBT FOR YOUNGER CHILDREN

- CBT-I has decades of research supporting its use with adults
- Newer studies have looked at adaptations of CBT-I for adolescent
- Multiple randomized controlled trials now indicate effectiveness in adolescents 15 and up
- There is also promising research to suggest that CBT-I helps adolescents with Depression, but less so with Anxiety
- More research is needed to look at medication vs. CBT-I in children and adolescents



# COMPONENTS OF CBT-I USED WITH ADOLESCENTS AND CHILDREN

- Sleep Restriction \*\*
- Stimulus Control Therapy\*\*
- Sleep Hygiene is necessary, but not sufficient to improve sleep for adolescents with insomnia
- Relaxation
- Cognitive Therapy
- Special behavioral treatments for young children
  - Excuse me drill
  - Bedtime Pass
  - Behavioral parent training

# SLEEP RESTRICTION

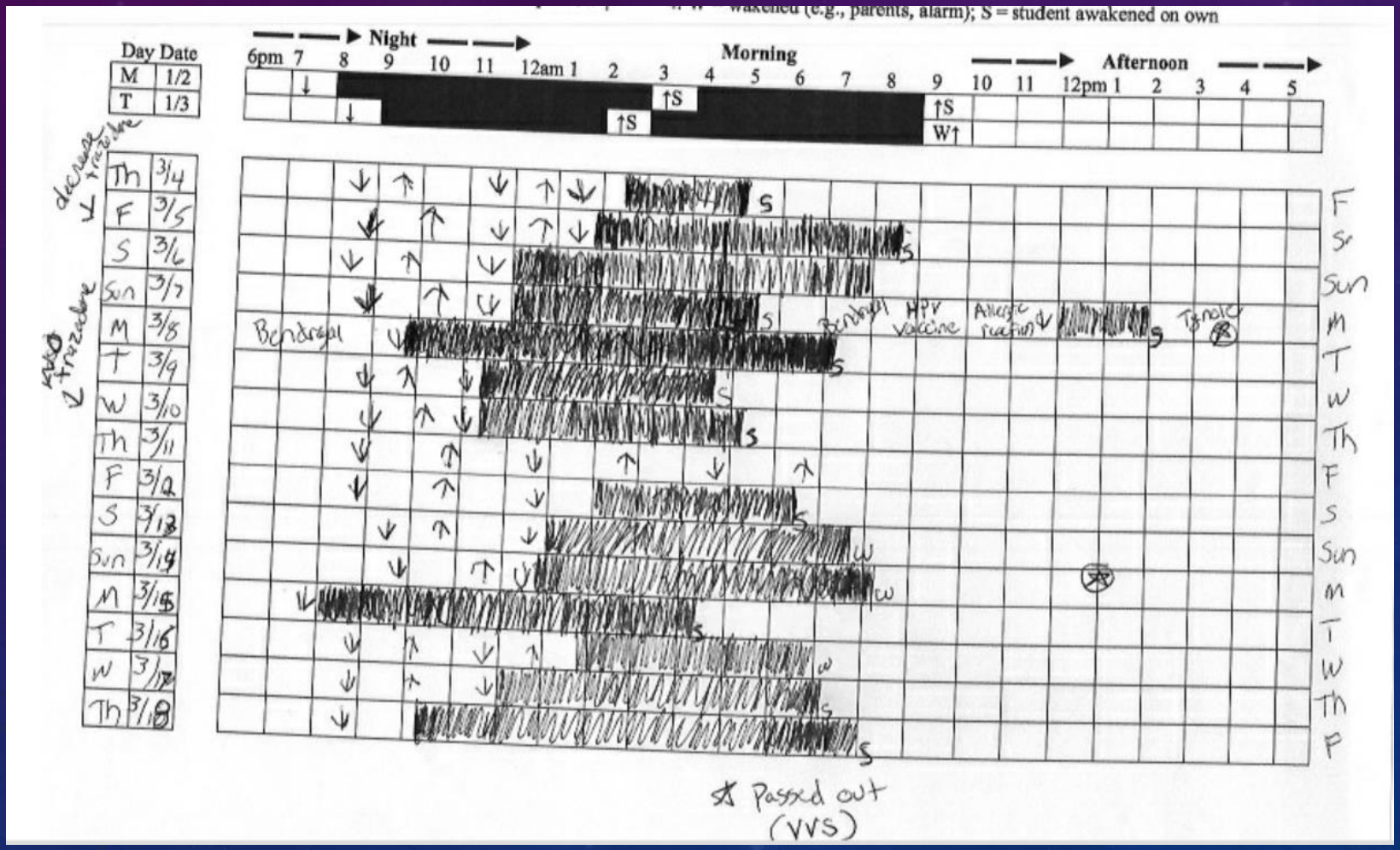
- 1. Collect a sleep diary to see what time the person typically falls asleep and awakens
- 2. Calculate the sleep restriction to average total sleep time (TST) + 30 minutes
- 3. Set a regular wake time
- 4. Keep them out of bed until delayed time (No time in bed all day)



# USING SLEEP RESTRICTION AS MONOTHERAPY

- 12 year old boy, White, rural New Hampshire
  - Adopted by grandmother
  - Diagnosed with anxiety and PTSD
  - Vasovagal syncope
  - School attendance has been very poor during the pandemic
  - Struggled with sleep for many years
  - Undergone therapy at community mental health for several years
  - Mild OSA

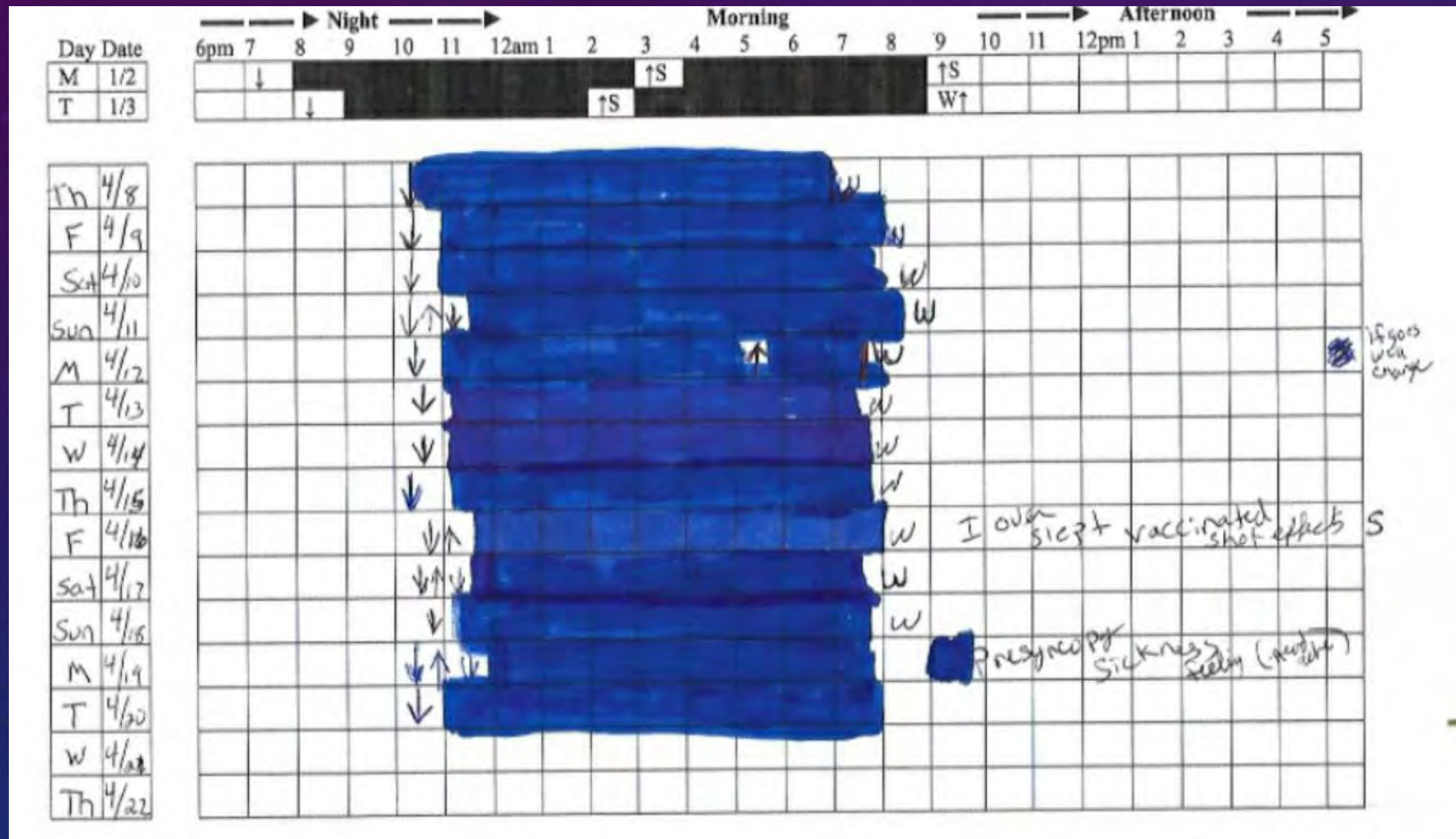
# SLEEP RESTRICTION AND SCHEDULING



## Averages

- TIB: 9.6 hrs
- TST: 6 hrs
- Latency: 3.4 hrs
- SE: 62%

1 MONTH LATER: INTERVENTION – GET INTO BED AT 10:30,  
 WAKE UP EVERY DAY AT 8:00. AVOID BED COMPLETELY AT ALL  
 OTHER TIMES.



### Averages

TIB: 9.3 hrs  
 TST: 8.7 hrs  
 Latency: .57 hrs  
 SE: 93%

# Stimulus Control: 2-Bed Exercise

Bed 1

ODDS 1 IN 2

SLEEP

SEXUAL BEHAVIORS

Bed 2

ODDS 1 IN 15

Stress out about people at school

EAT

READ

TV

SEXUAL BEHAVIORS

SLEEP

LIE AWAKE

WORRY

HOMEWORK

PROBLEM SOLVE

Fortnight

Fortnight

Fortnight

Text

Insta/FB/Snapchat

# THE EXCUSE ME DRILL





# MORE CHALLENGING CASE: SLEEP RESTRICTION, STIMULUS CONTROL, AND EXCUSE ME DRILL

- 9 y.o. boy, White, Rural New Hampshire
- Level 1 Autism Spectrum Disorder
- ADHD
- Unable to participate in mainstream school except for 1-hour/day
- Sleeping in living room (family had moved both brother's beds into living room)
- Lots of interactions with parents around bedtime and television on
- Needs parental presence to fall asleep; afraid to sleep alone or even get into bed
- Mom has not been able to sleep more than 4 hours a night in years

# SLEEP DIARY

		NIGHT										MORNING									
DAY	DATE	6pm	7	8	9	10	11	12am	1	2	3	4	5	6	7	8	9	10			
W	31-May			↓			↑ S			↓			↑ S		W ↑						
TH	1-Jun			↓				↑ S		↓				↑ S							
F	2-Jun				↓				↑ S			↓				↑ S					
S	3-Jun				↓						↑ S		↓			↑ S					
S	4-Jun			↓				↑ S				↑ S			W ↑						
M	5-Jun			↓					↑ S	↓		↑ S			W ↑						
T	6-Jun			↓				↑ S		↓			↑ S								
W	7-Jun			↓					↑ S	↓				↑ S							
TH	8-Jun			↓				↑ S		↓		↑ S	↓		W ↑						
F	9-Jun				↓				↑ S		↓				W ↑						
S	10-Jun				↓					↑ S		↓						↑ S			
S	11-Jun			↓				↑ S		↓		↑ S	↓		W ↑						
M	12-Jun			↓							↑ S	↓			W ↑						
T	13-Jun				↓					↑ S		↓						↑ S			

## Averages

TIB: 10.6 hrs

TST: 5.8 hrs

Latency: 1.1 hrs

SE: 54%

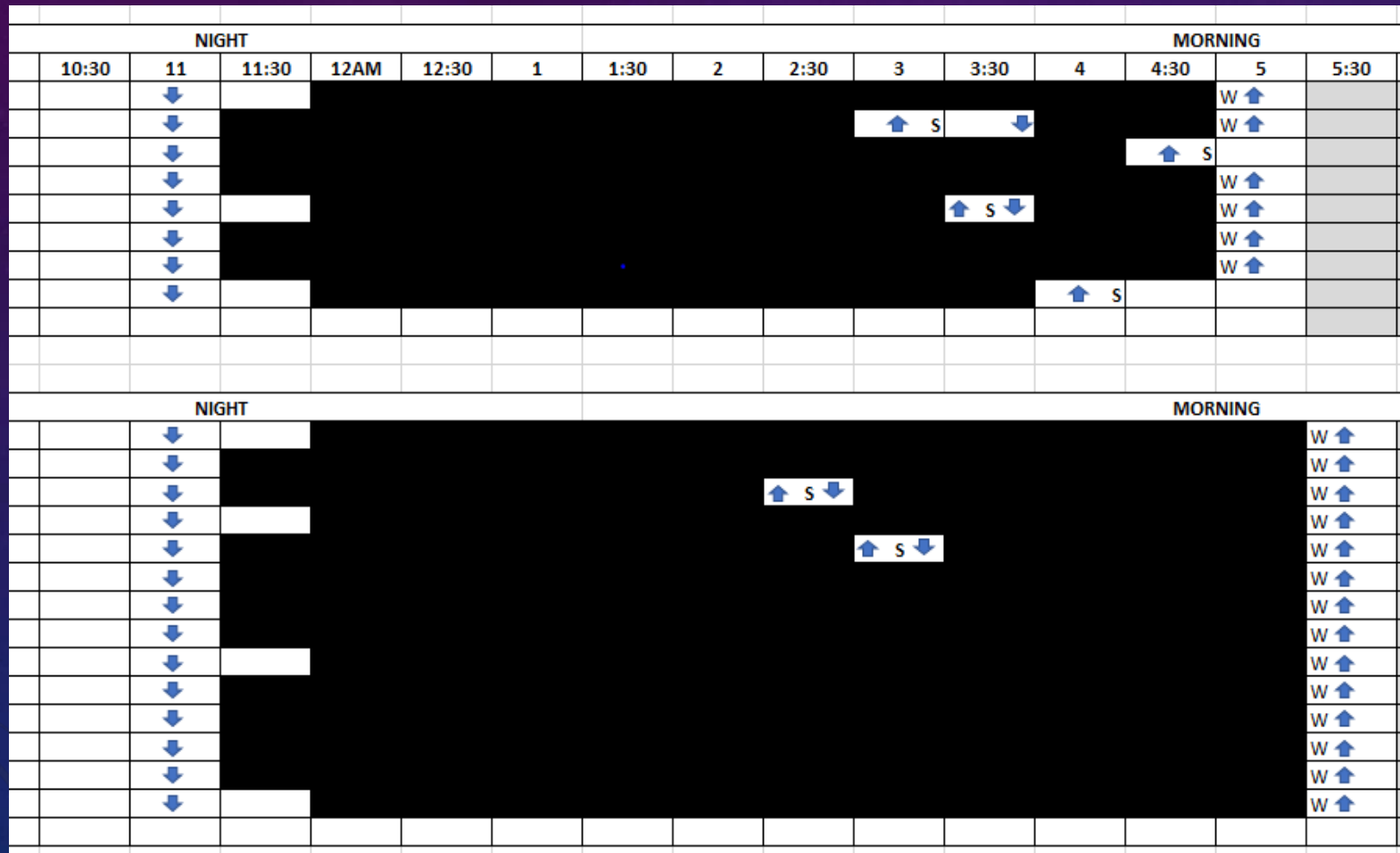
# INTERVENTION

- Started a sleep restriction 10:30 PM to 5:00 AM and sleep looked exactly the same
- Moved sleep restriction to 11:00 to 5:00
- Introduced a safety bed (fully covered by insurance) and removed bed from living room
- Began gradual exposure to being alone using excuse me drill and walkie talkie

# MIDDLE OF TREATMENT

## Averages

TIB: 10.6 hrs  
 TST: 5.75 hrs  
 Latency: .64 hrs  
 SE: 92%



## CURRENTLY

- In own bed 9 hours a night
- Sleeping 7.5 – 8 hours a night
- Mother is sleeping again
- Attending 4-5 hours of school per day
- Overall, everyone is quite pleased

## ADDITIONAL TREATMENT COMPONENTS: RELAXATION SKILLS AND COGNITIVE THERAPY

- Relaxation especially helpful with tension and waking up stressed
- Cognitive skills helpful with catastrophic thoughts about missing sleep

# *WELCOME to the*

## Pediatric Integrative Medicine ECHO: Changing Health Care for Children

*Session 11, January 18, 2024*

### Today's Program:

- Brief housekeeping
- Didactic: Developmental Pediatrics – Sandy Newmark
- Case Presentation:
- Case Discussion
- Summary
- Up Next

### Notes:

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# UCSF Osher Center for Integrative Medicine

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**Do 3.3 Million Children Really  
Need Ritalin? An Integrative  
Approach to ADHD**

**Sanford C. Newmark M.D.**

**Pediatric Integrative  
Neurodevelopmental Clinic**



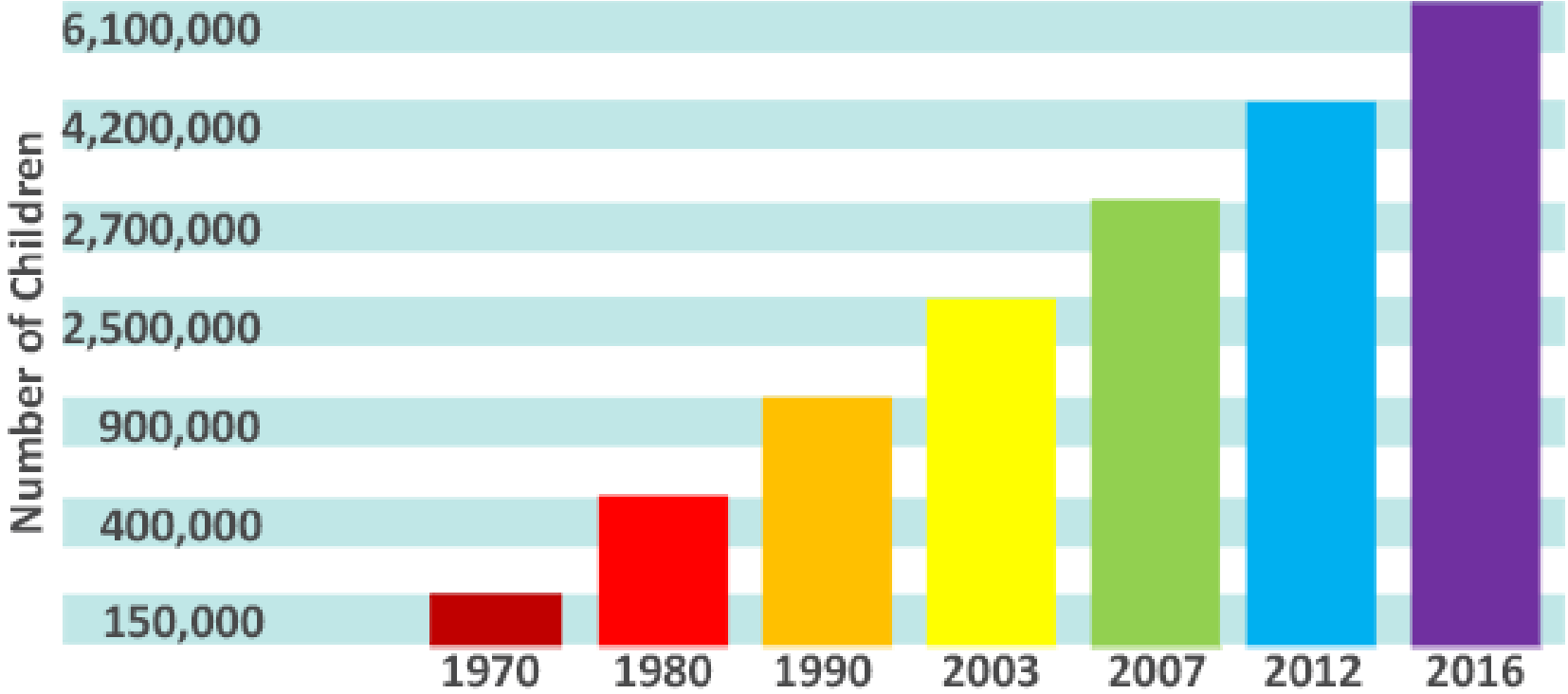
Your life, your health, your choice.



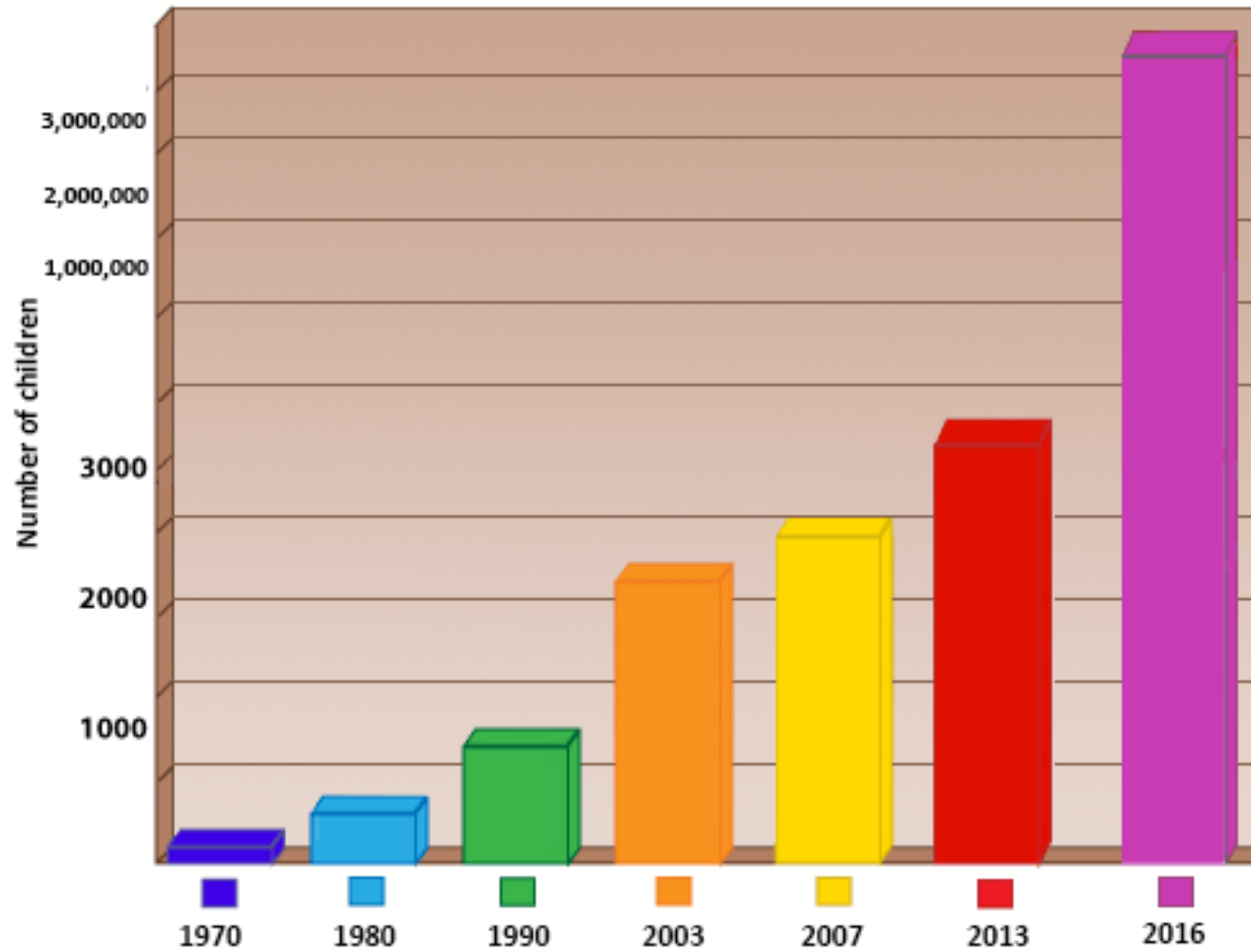
# Disclosure

No one involved in the planning or presentation of this activity has any relevant financial relationships with a commercial interest to disclose.

Children Diagnosed with ADHD in U.S. (estimated)



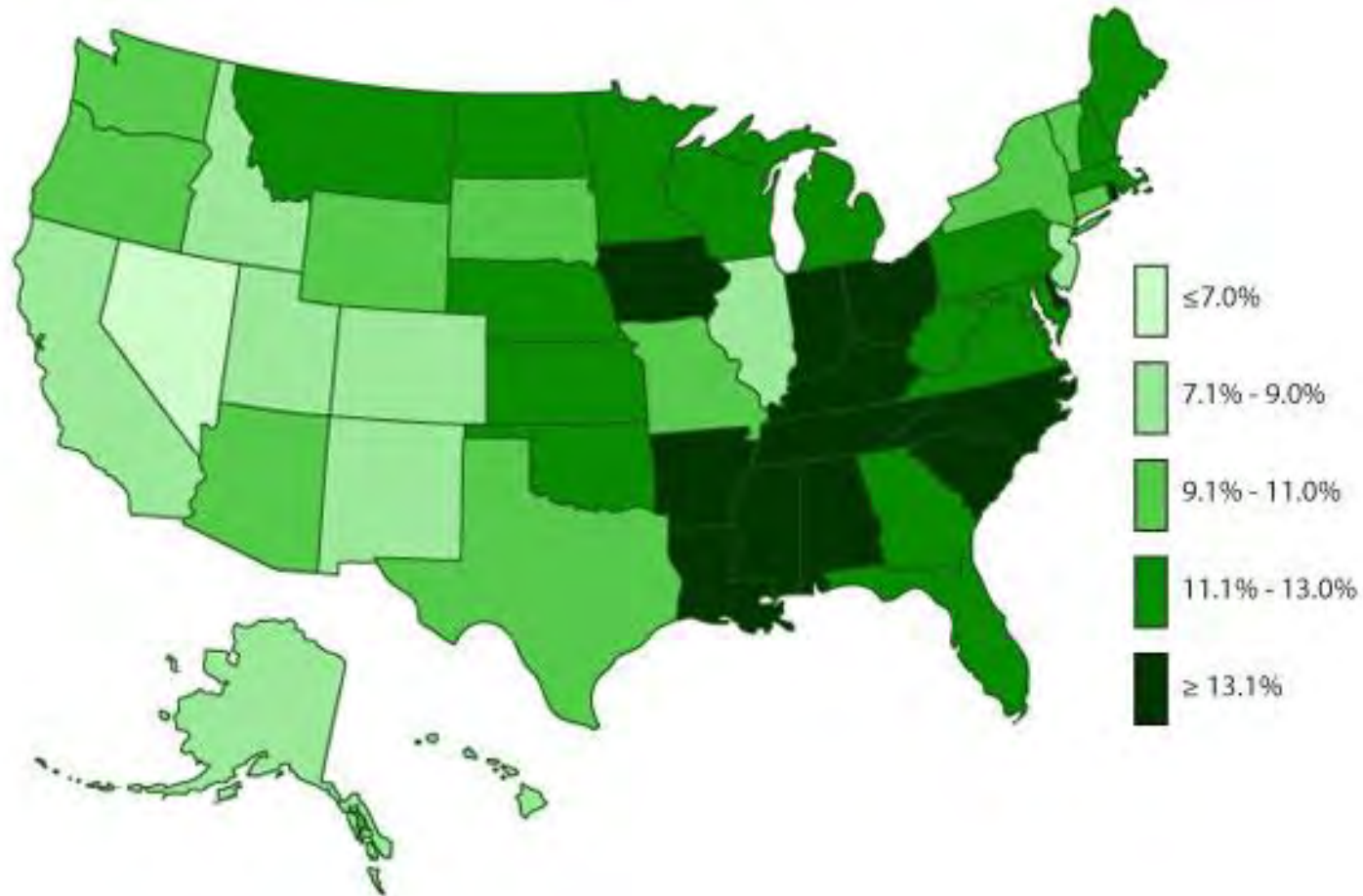
### *Psychostimulant Use in U.S. (estimated)*



# ADHD By State

**Arkansas – 17.6%**

**Nevada 5.6%**



# What is ADHD

- ADHD is a neurodevelopmental syndrome involving some combination of difficulties with attention, impulsivity, and hyperactivity that cause a significant problem in a child's, or adult's, life.
- Note that "Inattention Type" ADHD can exist without the hyperactivity and impulsivity
- There is both a strong genetic component and environmental influences on the expression of these genetics
- According to DSM V criteria **these symptoms must be sufficiently severe to cause an impact in at least 2 areas of a child's life.**

## ADHD as a Continuum

	"NORMAL"	RISK	ADHD
ACTIVITY:	Quiet		Active
ATTENTION:	Focused		Distractible
IMPULSIVE:	Careful		Impulsive

# Born in the Wrong Month?

- **Diagnosed with ADHD** -**10%** of Kindergarteners born in August (youngest in class) **4.5%** born in September (oldest in class)
- **Treated with Psychostimulants** - **8.3%** of those born in August, as **3.5%** born in September

**900,000 Incorrect Diagnoses**

Journal of Health Economics 2010

# Pesticides and ADHD

- **1139 children 8 to 15 years** “children with higher urinary levels of organophosphate metabolites were more likely to meet the diagnostic criteria for ADHD”
- For the most-commonly detected DMAP metabolite, dimethyl thiophosphate, **children with levels higher than the median of detectable concentrations had twice the odds of ADHD**

Pediatrics, June 2010



## ADHD as a Continuum

	"NORMAL"	RISK	ADHD
ACTIVITY:	Quiet		Active
ATTENTION:	Focused		Distractible
IMPULSIVE:	Careful		Impulsive

# Does Eating Organic Help?

- Children who ate organic fruits and vegetables had 1/5<sup>th</sup> the level of organophosphate pesticide metabolites in their urine
- Children can “reduce exposure levels from ‘uncertain’ to ‘negligible’ risk”



- **Environmental Health Perspectives 2003**

# Canadian Healthy Infant Longitudinal Development (CHILD) study.

- Looked at 5 year olds and asked about previous screen use
- Mean screen-time was 1·4 hours/day at five-years and 1·5 hours/day at three-years.
- Compared to children with less than 30-minutes/day screen-time, **those watching more than two-hours/day were 5·9 times more likely to report clinically significant inattention problems**  $p = 0·01$ ).
- Amana SK, et. Screen-time is associated with inattention problems in preschoolers: Results from the CHILD birth cohort study. PLoS One. 2019 Apr 17;14(4):

# Do All Kids Who Have ADHD Need Psychostimulants?



# Why not just use stimulants? They work, don't they?

- Short term- Stimulants effective 70% of time. Increase dopamine and noradrenalin levels frontal lobes.
- Can significantly improve school, home, and social success in some children.
- But they can have side-effects, and:
- **There are no long-term studies adequately addressing the effects of many years of these medications on the developing brain.**

# Stimulant Medications and Side-Effects

- Decreased Appetite and Weight Loss
- Trouble Sleeping
- Abdominal Pain
- Headaches
- Tics
- Bizarre Behavior
- Hallucinations (at least 1:100)
- Increased Blood Pressure (may be bigger problem in adults)
- Decreased growth



# More Subtle but “Worrisome” Effects

- “He’s just not himself”
- “She’s lost her spark, her joy”
- “He’s just not the same kid”
- “She’s teary, or sad a lot”
- “He’s not as enthusiastic or creative”



# Do Stimulants Improve long term OUTCOME?

**Evidence for long term positive effects of ADHD treatment is weak(or non-existent- depending on your perspective).**

Studies that randomize treatment groups have failed to show positive effects on outcome



# Long Term Efficacy Psychostimulants

- Debate: Are Stimulant Medications for Attention-Deficit/Hyperactivity Disorder Effective in the Long Term? (Against) James Swanson
- Debate: Are Stimulant Medications for Attention-Deficit/Hyperactivity Disorder Effective in the Long Term? (For) David Coghill
- Journal of the American Academy of Child & Adolescent Psychiatry Volume 58 Oct 2019

# Do Psychostimulants Improve Learning?

- 3 week crossover trial academic instruction on social studies/science or vocabulary
  - Either psychostimulant or placebo
  - Behavior and finishing work improved in treated group.
  - Learning of material did not
- 
- **Conclusions: Acute effects of OROS-MPH on daily academic seatwork productivity and classroom behavior did not translate into improved learning of new academic material taught via small-group, evidence-based instruction. Impact Statement**

# An Integrative Approach to ADHD

- Nutrition - Basic principles
- Nutrition - Food Sensitivities and Elimination diets
- Nutritional Supplements
  - Omega-3 Fatty Acids
  - Zinc
  - Iron
  - Magnesium
  - Vitamin D

# An Integrative Approach to ADHD

- Botanicals
- Sleep
- Parenting Skills/Behavioral Interventions
- School Interventions
- Exercise/meditation/martial arts
- Neurofeedback/digital therapeutics

# Alternative or Complementary Therapies

- Homeopathy
- Craniosacral Therapy
- Traditional Chinese Medicine
- Other Energy Medicines

## Elimination Diet for ADHD –Lancet - Feb 2011

- 100 children – 50 on restrictive diet – 50 controls 5 weeks
- Restricted diet (few foods) Rice, meat, vegetables, pears, water as basic diet
- **After 5 weeks 64% of children had 40% improvement on ADHD rating Scales**
- Assessor blinded, but parents and teachers not

# INCA Study – Phase 2

- **Double Blind Placebo Controlled Trial of those who responded to elimination diet in Phase I**
- Children were given challenge foods and relapse of ADHD sx occurred in 19 of 30 children.
- Evaluators, patients and family were blinded as to which foods were being challenged.

# ADHD and Food Sensitivity - 2

- **76 children Oligoantigenic diet**
- 62 improved.
- 28 completed a DBPCFT  
**Symptoms worse on active foods than placebo.**
- Wheat, dairy, artificial colors and preservatives commonest

Lancet 1985





# ADHD and Food Sensitivity - 3

- 78 hyperactive children placed on few foods diet
- 59 improved
- Again double blind second phase positive
- **Archives of Disease in Childhood. 1993**
- **Metanalysis 2012 – 33% children likely to respond**



# Artificial Colors, Flavors, and Preservatives

- 153 3 year olds & 144 8/9 year olds
- Given Sodium Benzoate and an artificial color and additive mixture or placebo
- **Artificial colours or a sodium benzoate preservative (or both) in the diet result in increased hyperactivity in 3-year-old and 8/9-year-old children in the general population.**

**Lancet 2007**



# In Europe, Dyed Foods Get Warning Label

- Products with Yellow 5, Red 40, Other Dyes  
**“May Have an Adverse Effect on Activity and Attention in Children”** July 20, 2010



# Basic Nutrition - or - **When did “Pop Tarts” become a breakfast food?”**

- SAD American Diet –High in sugar, processed carbs, unhealthy fats, low in fiber
- Maintaining a normal blood sugar
  - Sugar
  - Processed Carbohydrates
  - Protein
- [The Glycemic Index](#)



# “Healthful Diets & ADHD

- 12 week trial of DASH diet- significant improvement in ADHD symptoms, even among teachers blinded to treatment category.
- Children in Spain with lowest adherence to Mediterranean diet 3x risk of ADHD



# Appleton Central High School

- Appleton Central Alternative Charter High School –kids “struggling in conventional settings”-“...disruptive in class, truant. have psychological and emotional problem, come from dysfunctional home environments.”
- A healthful meal program for breakfast and lunch
- Vending machines selling candy, soda, and chips removed.

# Appleton Central -2

- **“...”I can say without hesitation that it's changed my job as a principal...”**
- "Since we've started this program, I have had zero weapons on campus, zero expulsions from the school, zero premature deaths or suicides, zero drugs or alcohol on campus. Those are major statistics.”



# Omega-3's for ADHD-Meta-Analysis

**“Omega-3’s, particularly with high doses EPA, were modestly effective in the treatment of ADHD”**

- About 40% as effective as stimulants
- Very few and mild side-effects

- Journal of the American Academy of Child and Adolescent Psychiatry 2011
- Chang 2018





# Fish Oil: Unanswered Questions

- Dosing: Based on Total EPA+DHA
- Children 6-10 – 1000mg (EPA 1.5-2x DHA)
- “ “ 10-12 – 1500mg
- “ “ 12 + - 2000 mg
  
- Are all brands the same?
- **How do you get your kids to take this stuff?**



# ADHD and Iron Deficiency

- Fifty-three children with ADHD and 27 controls.

- **Serum Ferritin**

ADHD = **23**

Controls = **44**



- Serum iron, Hemoglobin, and hematocrit were normal.
- **Confirmed by Metanalysis of 11 studies 2017**

Arch Pediatr Adolesc Med. 2004 PLOS One 2017

# Effects of iron supplementation on ADHD

- 23 children with ferritin <30, not anemic
- Treated for 12 weeks with iron or placebo
- **ADHD, as measured by standard measuring tools, improved in the iron taking group and not the placebo.**
- Mechanism – iron important cofactor in dopamine production
- **Dose – 30-40 mg/day if not anemic – use chelated**
- **Pediatric Neurology 2008 Clinical Psychopharm 2021**

# Zinc for ADHD

- Arnold (2011) 15 or 30mg zinc in randomized trial with and without amphetamine.
- Zinc alone no results.
- With 30mg zinc - 37% reduction optimal amphetamine dose.
- **Overall- Zinc is an important nutritional factor in ADHD. Worth checking and treating in those who are deficient (or low normal?) Dose 20-30 mg/day**



- Journal of Child & Adolescent Psychopharmacology. 21(1):1-19, 2011 Feb.

# Ginkgo & ADHD

- DBRPCT
- 66 children – all taking
- methylphenidate
- Ginkgo or placebo
- After 6 weeks –
- **statistically significant improvement in treatment group for inattention, not hyperactivity**
- **Dose – 30 mg 2x/day**
- Complementary Therapies in Clinical practice 2015



# Bacopa and ADHD

- **Effects of Bacopa monnieri (CDRI 08<sup>®</sup>) in a population of males exhibiting inattention and hyperactivity aged 6 to 14 years: A randomized, double-blind, placebo-controlled trial**
- Improvements in cognitive flexibility ( $p = .01$ ), executive functioning ( $p = .04$ ), interpersonal problems ( $p = .02$ ), and sleep routine ( $p = .04$ ) were noted in those consuming CDRI 08<sup>®</sup> over placebo. CDRI 08<sup>®</sup> did not improve behavioural outcomes, but may have cognitive, mood and sleep benefits in children aged 6 to 14 years.

# Saffron & ADHD

- **Crocus sativus L. Versus Methylphenidate in Treatment of Children with Attention-Deficit/Hyperactivity Disorder: A Randomized, Double-Blind Pilot Study**
- 54 children randomized to Methylphenidate or Saffron for 6 weeks
- Both groups improved – no difference between groups.
- Limitations – small size, , MPPH dose not optimized.
- Journal Child and Adol Psychopharmacology 2019

# Life Choices and Mind Body

- **Decrease electronic media!**
- **Sleep**
- Yoga or meditation
- Mindfulness training
- Exercise
- Martial Arts
- Time in nature





# Sleep – Often Major ADHD Issue

- Many of these Kids have hard time turning off their brain
- First – sleep hygiene (hiding electronics?)
- Melatonin -start at 0.5 mg.
- Sleep audios- Health Journeys and Others
- Various botanicals and supplements
  - 5 HTP, L-Theanine
  - Natures Way Vitality Sleep

# Cognitive Behavioral Therapy

- Good studies have shown that **CBT is an effective treatment for ADHD in adolescents and adults**, with or without medication.
- 2012 study – groups randomized to CBT + dextroamphetamine or CBT +Placebo
- Both groups improved. Medication group did not improve more than placebo group.
- 6-12 sessions can be effective

# Behavioral Management

- Many parents are **frustrated, confused, angry, helpless, guilty** about their lack of parenting success.
- Often end up in maladaptive patterns with high levels of criticism and negative emotions.
- **Helping parents with this is crucial. Can make a dramatic difference in behavior**
- Many approaches – Important to pick one and stick to it- Mental health consultation often necessary.

# School Interventions

- **The right school and the right teacher can make all the difference**
- Sometimes 1<sup>st</sup> grade awful, 2<sup>nd</sup> grade fine, 3d grade terrible, etc. etc.
- 504 plan –reasonable classroom modifications
  - Set of books for home
  - Modified homework
  - More time or quiet place for test taking
  - Direct communication of homework assignments
  - **IEP's and 504's tend to fall apart – need to follow**

# Tolson School-the Nurtured Heart

- Tolson School, Tucson. “Failing School” 75% of children from low income families.
- **Entire school** began to apply the **Nurtured Heart** approach
- Behavioral management system based on highly increased positive feedback, clear rules, and well defined consequences, given without ‘energy”

# Tolson School

- Discipline problems dropped sharply
- Special education dropped from 31 students to 7 students
- 2 of 519 students on medication for ADHD (0.3%)!
- “Performing Plus School”
  - increasing test scores.



# How Do I Treat ADHD?

- **Make sure the diagnosis is correct!**
- **Clean Up the Diet**
- Elimination Diets
- Check serum Ferritin, Zinc,
- Omega-3's
- Behavioral Interventions
- School Modifications

# How Do I Treat ADHD?

- Exercise- Martial Arts
- Mind-Body – Yoga-meditation
- Sometimes botanical and other CAM treatments
- EEG Neurofeedback
- Psychostimulants when necessary



# Simple Steps for Treatment

- Decrease sugar and processed carbs
- Try simple elimination diet –only gluten or casein if necessary
- Check CBC, ferritin, zinc (Vitamin D) Treat where indicated
- Begin Fish Oil
- Address exercise
- Address sleep
- Address Screen Time
- Refer for parenting help where necessary
- Find professional to help with school interventions



# Take Home Message

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## Let's be Careful not to Over-Diagnose ADHD

**When we do diagnose ADHD, consider beginning with safe, non-pharmaceutical options before prescribing psychostimulants.**

UCSF Osher Center for Integrative Medicine

**Sanford.Newmark@ucsf.edu**

# *WELCOME to the*

## Pediatric Integrative Medicine ECHO: Changing Health Care for Children

*Session 12, February 6, 2024*

### Today's Program:

- Brief housekeeping
- Didactic: Heme/Onc- Matt Hand
- Case Presentation: Matt Hand
- Case Discussion
- Summary
- Up Next

\*Please note we are adding 2 make up sessions in May (*these will not have CME associated with them*)

### Notes:

- Enter name, organization into chat
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- [Submit cases](#)



# AN INTEGRATIVE APPROACH TO ONCOLOGY

Matthew Hand DO

Section Chief, Pediatric Nephrology and Integrative  
Medicine

Children's Hospital at Dartmouth

Dartmouth Health, Children's



# Disclosures

- Davinci/FoodScience/Little Davinci: Medical Advisor
- Note: As discussed in a previous session of our ECHO program, Supplements and Botanicals are not regulated by the FDA. The current presentation offers an overview of supplements/botanicals but cannot cover all the data/references related to individual therapies. It can also not cover all the side effects/benefits/drug-herb interactions related to the individual treatments.
- For more detailed look at these areas we refer you back to the ECHO session “Botanical Bootcamp” and the following independent reviewers:
  - Natural Medicine Comprehensive Database <https://naturalmedicines.therapeuticresearch.com/>
  - United States Pharmacopia, <https://www.usp.org/>
  - ConsumerLabs.com
  - NSF, <https://www.nsf.org/>

# General nutritional rules

- Eat foods as whole foods, not processed foods
- Eat foods high in omega 3 fats
- As much of a plant based diet as possible including soy (even in breast cancer based on more recent info)
- Eat cruciferous vegetables as much as possible
- Add spices that have lots of anti-cancer/inflammatory effects: turmeric, garlic, onions, ginger
- Limit red meat
- Drink lots of green tea (and possibly coffee)
- If we can significantly decrease cancer with food better for patients even after diagnosis. Recent study in colon cancer should improved outcomes even after diagnosis.

# Supplement/Herbs

- Somewhat controversial
- Common belief that more is better but some may increase cancer risks so general recommendation is to get it from food
- Also risk that it may interfere with Chemo/response.
- Three basic principles that I use
  - Decrease inflammation
  - Improve whole body/immune response (IE adaptogens)
  - Decrease toxicity of the chemo/therapies

# My General Recommendations

- Omega 3s
- Vitamin D3
- Turmeric
- Astragalus
- Chinese mushrooms
- Milk thistle (liver and possible renal protective)
- CoQ10: for cardiomyopathy with chemo
- Melatonin
- Herbs/supplements to manage other symptoms IE sleep, neuropathy, esophagitis, oral ulcers, etc In particular glutamine
- Be Careful with vitamin E and High dose vitamin B's



## My favorite supplement/botanical reference

Hematol Oncol Clin N Am 22 (2008) 581–617

HEMATOLOGY/ONCOLOGY CLINICS

OF NORTH AMERICA : Mary L. Hardy, MD

- Garlic extract with docetaxel: No change in pharmacokinetics
- Milk thistle with irinotecan: No change in pharmacokinetics
- St. John's wort with imatinib and irinotecan: Reduced serum levels
- Black cohosh extracts: No evidence estrogenic activity
- Beta-carotene and alpha tocopherol in head and neck patients during radiation: Increased rate local recurrence and high all cause mortality at 6.5 years
- Vitamin C, beta-carotene, alpha tocopherol in non-small cell lung cancer patients during chemotherapy: No change in response rate; no increase in toxicity
- Glutamine in bone marrow transplant: Did not increase relapse rate, progression of malignancy or incidence of graft versus host disease
- Glutamine in breast cancer patients: No adverse effect on tumor response
- Vitamin E in variety of solid tumors with cisplatin chemotherapy: No change in tumor response or survival

- Glutamine in variety of cancer patients undergoing chemotherapy and radiation: Decreased rates and severity of mucositis, neuropathy, and intestinal toxicity; decreased use of pain medication in stomatitis patients; improved nutrition in stomatitis patients; improved ADL in neuropathy patients
- Vitamin E topically in children undergoing bone marrow transplant; in adults undergoing chemotherapy or radiation to head and neck: area Improved stomatitis
- Zinc in head and neck patients during radiation therapy: Improved stomatitis
- Chamomile extract as mouthwash in chemotherapy and radiation: Improved stomatitis sometimes
- Proteolytic enzymes in head and neck patients with radiation: Improved stomatitis
- Vitamin E orally in variety of cancers during cisplatin chemotherapy; patients with cisplatin and paclitaxel chemotherapy: Decreased rate of neuropathy
- Ginger postoperatively in surgical cancer patients; with MOPP chemotherapy; with cisplatin chemotherapy: Decreased nausea
- Chamomile skin cream: Decreased dermatitis

- Vitamin C, E, and selenium in chemotherapy patients: Decreased rate nephron and ototoxicity
- Coenzyme Q10 with anthrocycline chemotherapy: Decrease cardiotoxicity
- Trametes versicolor extract in variety of solid malignancies: Increased percentage of 5-year disease-free survival; decreased relative risk of regional metastases; improvement in overall survival
- Basidiomycotina extract in variety of solid malignancies: Increased NK cell activity; improvement in activities of daily living (ADL); longer disease-free survival interval
- Grifola umbellatae in bladder cancer: More effective than mitomycin C in preventing recurrences after surgery
- Agaricus blazei extract in variety gynecologic cancers with chemotherapy: Increased NK cell activity and decreased general symptoms
- Fermented wheat germ extract in pediatric cancer patients: Decreased episodes of febrile neutropenia
- Fermented wheat germ extract in colorectal or melanoma cancer patients: Lower incidence of new disease, new metastases, or death; increased time to relapse

- Probiotics in biliary cancer patients undergoing surgery; colorectal cancer patients undergoing chemotherapy; patients receiving abdominal and pelvic radiation: Lower postoperative infection rates; decreased gastrointestinal toxicity (diarrhea) with less hospital care and less reduction in chemotherapy; decreased incidence of diarrhea
- Fish oil in patients with cancer induced cachexia: Increased dietary intake, maintenance of weight, decreased fatigue
- Selenium selenite in breast cancer and head and neck cancer patients: Decreased lymphedema
- Ginkgo in breast cancer patients: Decreased lymphedema
- Variety of high flavinoid extracts: Decreased lymphedema
- Carnitine in cancer patients following chemotherapy; benefit most pronounced in patients with carnitine deficiency: Decreases fatigue
- Black cohosh extracts in breast cancer patients with menopausal symptoms: Decreases vasomotor symptoms in some trials

- Green or black tea in leukoplakia: Improved abnormality
- Green tea extract in high-grade intraepithelial neoplasia of the prostate without conventional therapy: Decreased progression to frank prostate cancer
- Pomegranate juice in prostate cancer patients with rising PSA after radiation or surgery: Increased PSA-doubling time
- Soy in complex formula in prostate cancer patients with rising PSA after radiation or surgery: Increased PSA-doubling time
- Lycopene in hormone refractory prostate cancer; in hormone responsive patients following orchiectomy: Limited clinical response in some patients; Improved clinical response

# Having said all that, Cautions on herbs and supplements: Very important

- There are two major concerns for oncology patients
  - Do they interact with drug metabolism (can inhibit or activate cytochrome systems) Classic was St Johns wort, Gingko and possibly high dose CBD
  - Anti-oxidants
    - Interesting issues since oxygen radicals important in inflammation.
    - Many chemo/therapies induce oxygen radicals as their impact.
    - One study in head and neck patients with high dose anti-oxidants with worse outcome.
    - More recent data does not show the same impact
    - In addition some chemo agents ex MESNA very potent anti-oxidants but used commonly in chemo regimens.
- One other theoretical concerns is using “immune stimulants” IE adaptogens in T Cell or lymphoproliferative conditions

# Mind body therapies

- Can't predict outcomes no matter how hard we try
- Can predict with 100% certainty stress will be part of the therapies
- Recommend for everyone a stress reduction activity
  - Mindfulness
  - Self hypnosis
  - Biofeedback
  - Moving meditation: yoga, tai chi etc.
- “prepare you mind for surgery”: Using mind body therapies to improve outcomes with surgery.

# Spirituality

- Never underestimate the power of ones sense of spirituality
- Don't be afraid to ask.
- Commonly either strengthens or hurts ones sense of self and faith
- Prayer
- Spirituality may be ones' sense of purpose or self. How do we improve this?



# Acupuncture/TCM

- One of my favorite therapies in oncology
- Initially used for N/V
- Can be helpful in many issues
  - N/V
  - Pain
  - Neuropathy
  - Sleep
  - Lymphedema
  - And more



# Key resources & references

- <https://www.mskcc.org/cancer-care/diagnosis-treatment/symptom-management/integrative-medicine>
- Hematol Oncol Clin N Am 22 (2008) 581–617, Hematology/Oncology Clinics of North America, Mary L. Hardy MD
- Natural Medicine Comprehensive Database  
<https://naturalmedicines.therapeuticresearch.com/>
- United States Pharmacopia, <https://www.usp.org/>
- ConsumerLabs.com
- NSF, <https://www.nsf.org/>



## **Forty-Three**

In ancient times, people lived holistic lives. They didn't overemphasize the intellect, but integrated mind, body, and spirit in all things. This allowed them to become masters of knowledge rather than victims of concepts. If a new invention appeared, they looked for the troubles it might cause as well as the shortcuts it offered. They valued old ways that had been proven effective, and they valued new ways if they could be proven effective. If you want to stop being confused, then emulate these ancient folk: join your body, mind, and spirit in all you do. Choose food, clothing, and shelter that accords with nature. Rely on your own body for transportation. Allow your work and your recreation to be one and the same. Do exercise that develops your whole being and not just your body. Listen to music that bridges the three spheres of your being. Choose leaders for their virtue rather than their wealth or power. Serve others and cultivate yourself simultaneously. Understand that true growth comes from meeting and solving the problems of life in a way that is harmonizing to yourself and to others. If you can follow these simple old ways, you will be continually renewed.

**Lao Tzu, Hua Hu Ching**

# *WELCOME to the*

## Pediatric Integrative Medicine ECHO: Changing Health Care for Children

Session 13, February 15, 2024

### Today's Program:

- Brief housekeeping
- Didactic: Gastroenterology - Matt Hand and Rachel Rooke
- Case Presentation: Matt Hand
- Case Discussion
- Summary
- Up Next

\*Please note we are adding 2 make up sessions in May (*these will not have CME associated with them*)

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# HOLISTIC HEALING FOR LITTLE TUMMIES: INTEGRATIVE THERAPIES IN PEDIATRIC FUNCTIONAL GI DISORDERS

Rachel K. Rooke, MSN, PNP-AC  
Dartmouth Health Children's  
Department of Pediatric  
Gastroenterology

Matthew Hand DO  
Section Chief, Pediatric Nephrology  
and Integrative Medicine



# Disclosures

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- Note: As discussed in a previous session of our ECHO program, Supplements and Botanicals are not regulated but the FDA. The current presentation offers an overview of supplements/botanicals but cannot cover all the data/references related to individual therapies. It can also not cover all the side effects/benefits/drug-herb interactions related to the individual treatments.
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  - United States Pharmacopia, <https://www.usp.org/>
  - ConsumerLabs.com
  - NSF, <https://www.nsf.org/>

# OBJECTIVES



Discuss basic pathophysiology of common pediatric GI disorders



Review the impact of these conditions on quality of life and common western medicine therapies



Discover integrative approaches to management of common functional GI conditions



## Common Pediatric Functional GI Disorders

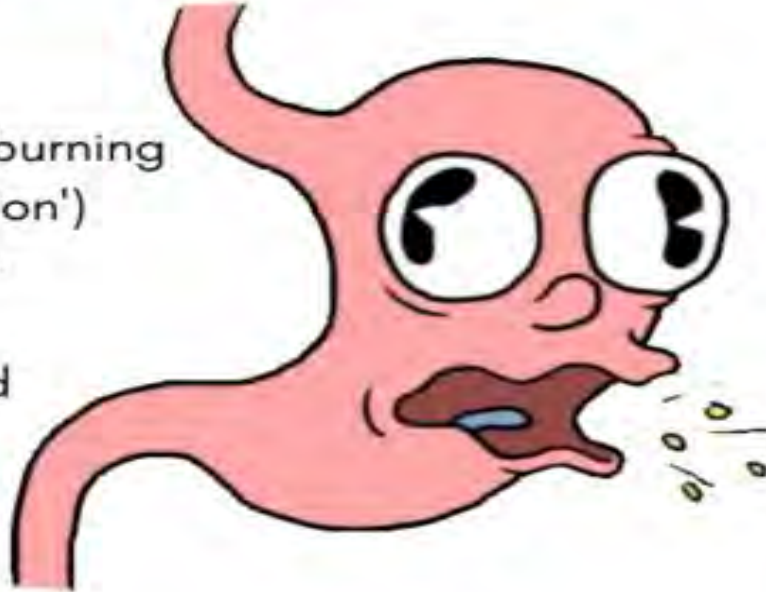
- Functional Dyspepsia
- Functional Abdominal Pain (FAP)
- Irritable Bowel Syndrome (IBS)
- Functional Constipation

*Understanding  
Functional GI  
Disorders in  
Children*

# FUNCTIONAL DYSPEPSIA...WHAT IS IT?

## SYMPTOMS

- Upper gut pain or burning (feels like 'indigestion')
- Getting full quickly
- Excessive fullness
- Bloating, reflux and nausea



@andreahardyrd

Functional  
Dyspepsia

# Abdominal Pain

## Functional Abdominal Pain

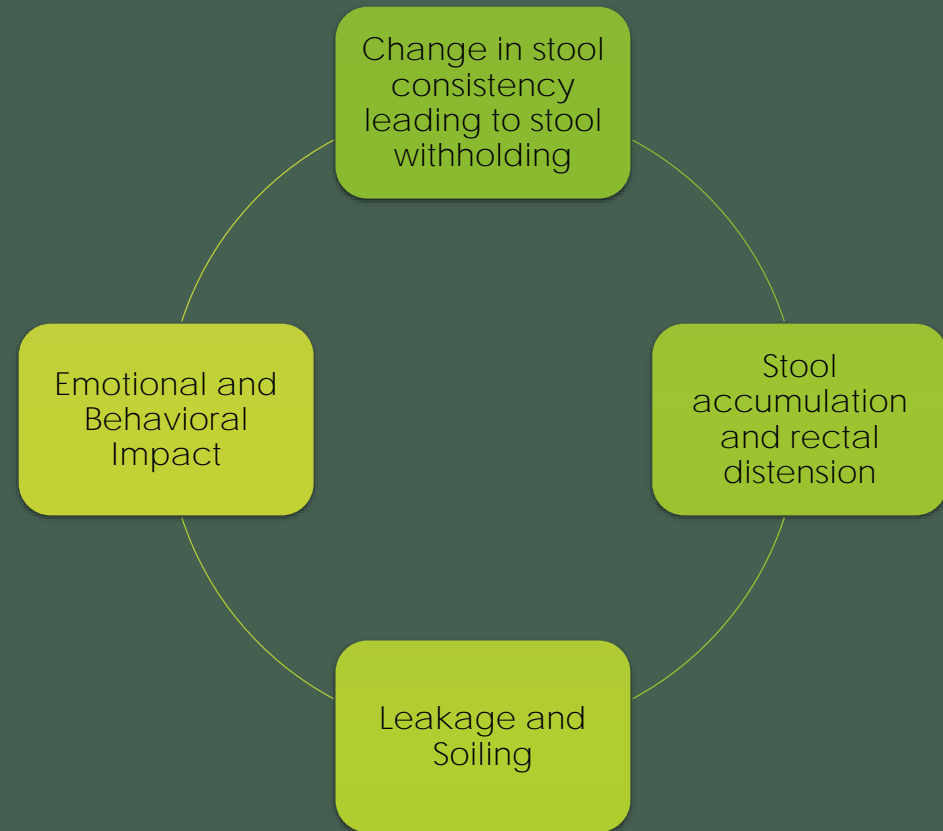
- Chronic abdominal pain without an identifiable “organic” cause
- Pain typically localized to the periumbilical region

## Irritable Bowel Syndrome

- Recurrent abdominal pain associated with changes in bowel habits
- Absence of structural abnormalities



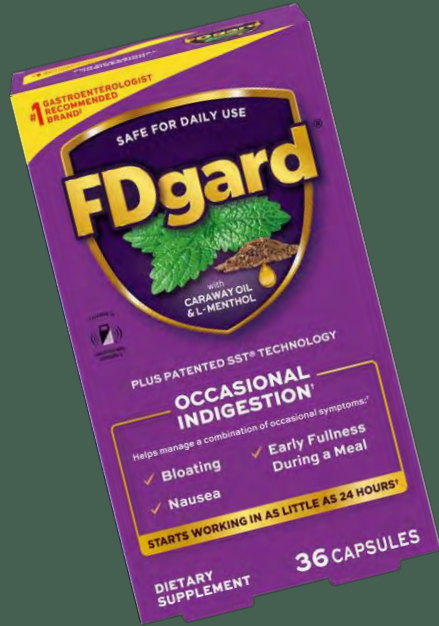
# FUNCTIONAL CONSTIPATION and ENCOPRESIS



# ROME Foundation

- Non-profit organization to help enhance:
  - Understanding
  - Diagnosis
  - Treatment
- Helps develop criteria for diagnosing DGBIs (disorders of the gut-brain interaction).

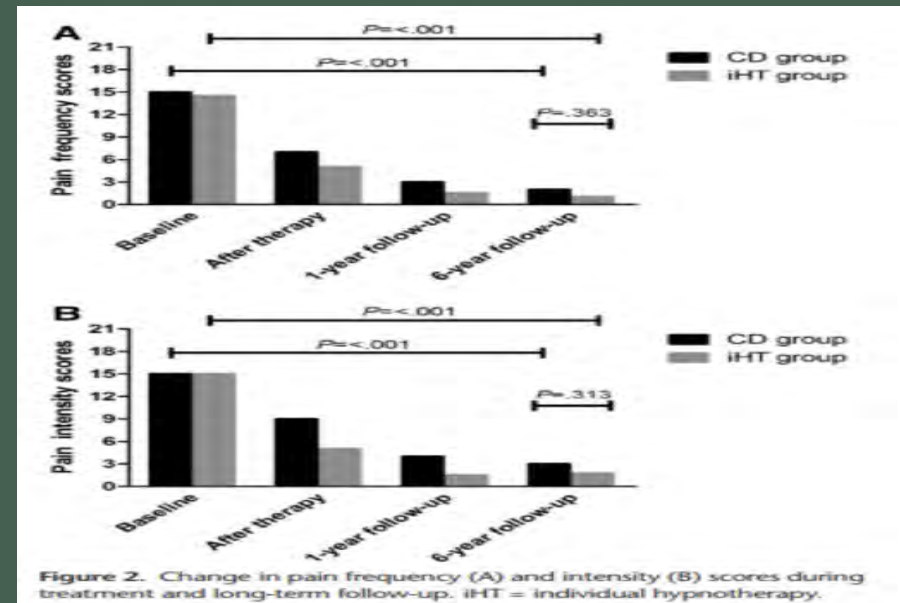
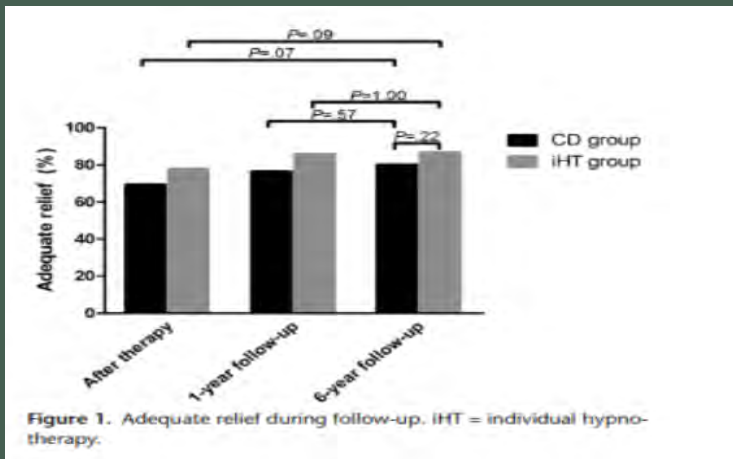
# Common Therapies



OPEN

## Long-Term Follow-up of Individual Therapist Delivered and Standardized Hypnotherapy Recordings in Pediatric Irritable Bowel Syndrome or Functional Abdominal Pain

*\*Robyn Rexwinkel, MSc, \*Jeske F.M. Bovendeert, MD, \*Juliette M.T.M. Rutten, MD, PhD,  
\*Carla Frankenhuys, BSc, \*Marc A. Benninga, MD, PhD, and †Arine M. Vlieger, MD, PhD*



- The proportion of children reporting AR at 6-year follow-up was 80.0% in the CD group and 86.6% in the iHT group

- **ADDRESS THE UNDERLYING CONSTIPATION**

- DIET

- prunes, pears, apricots, chia seed in smoothies, ground flaxseed

- FLUID, FLUID , and more FLUID!!!

- Improve physical movement

- **MEDICATIONS**

- Osmotic Laxatives
- Stimulant Laxatives
- Lubricants
- Rectal Treatments

- **BEHAVIORAL MODIFICATION**

- Regular Toileting Routine
  - Potty Box, rewards and incentives
- Addressing emotion factors



Breaking the  
Cycle of  
Stool  
Withholding

**Early  
recognition  
and  
intervention  
are CRUCIAL**





POTPOURRI OF  
BOWEL  
MEDICATIONS

## Stool softeners and osmotic laxatives:

These medicines pull water into the bowel, softening the stool to make them easier to pass.



**Stimulants:** These medications help stimulate the colon and increase the squeeze of the bowels.



**Lubricants:** help ease the passage of stool and lubricate the intestines. These are especially helpful for children that are withholding stool.



This medication is emulsified and needs to be mixed well. Can mix with milk/pudding or hot chocolate or can give with a spoonful of ice cream! Do not use unless instructed by a provider, as this medication should be AVOID in children under 2 or children with swallowing difficulties.

Suppositories/Enemas: These medications are helpful to stimulate bowel activity from below and helps empty the colon from below.



# Nutrition

- IM dietitians: Focus on anti-inflammatory diet,
- Therefore, I recommend
  - Increase anti-inflammatory fats-IE use olive oil, fish twice a week and supplement with omega 3's (see further discussion)
  - Mindful eating
  - Cook foods down if needed, avoid clear triggers, watch skins and eat fruits/vegetables that are very colorful (phytonutrients).
- Elimination diet. I use less commonly. Select most common triggers: IE Gluten, dairy

# EXERCISE

- Recommend non-competitive exercise with focus on wellness *even if competitive athlete*. Helps to “take back control”, focus on health, stress reduction, moving meditation.
- Other cultural systems place big emphasis on GI tract, wellness stems from health GI tract “not just eating and pooping”
- BENEFITS OF EXERCISE
  - Improve gut motility
  - Improve overall health
  - Decrease side effects of meds (fatigue, bone disease, weakness, hypertension, weight gain etc)
- Start off very slow (deconditioning effect) and pick something you like.
- Strongly recommend yoga, Tai Chi, Qi Gong, other martial arts or walking. Much of yoga and tai chi focus on improving GI function and recognizing wellness.
- Studies looking at benefits of exercise in patients with IBS
  - Taneja et al Appl Psychophys Biofeed, 2004 in IBS
  - Birdee et al Acad Pediatr 2009 Review of yoga in pediatrics
  - Evans et al Peds Gastro Nutrition: Yoga for IBS, adol and young women
  - Kuttner et al Pain Res Manag 2006 IBS

- Children and caregivers are taught:
  - -reframe perception of pain
  - -reward well behavior
  - -establish contingency plans for management of pain
  - -attempt to ignore pain behavior
  - -use of positive self-talk, relaxation and imagination
- -56% pain-free initial response with 75% pain-free at 6 months
  - Sanders et al: *J Consult Clin Psychol.* 1994;62:306-314.
- -Groups taught CBT: 72% pain-free post intervention
  - Humphreys et al: *J Pediatr Gastroenterol Nutr.* 2000;31:47-51.
- -25% decrease in pain scores and 30% decrease in absenteeism
  - Robins et al: *J Pediatr Psychol.* 2005;30:397-408.

# CBT

## Cognitive Behavioral Therapy



# Biofeedback

- -Combines relaxation and mental imagery with visual or auditory
- feedback of somatic changes
- -ie: skin temperature, skin resistance, heart rate variability
- -Especially helpful in modulating autonomic reactivity
- Ex: Heartmath.com

# Guided Imagery

- -A form of self regulation in which a state of deep relaxation is
- induced using progressive muscle relaxation (PMR)
- -The subject is then guided to actively create images to facilitate
- resolution of the problem
- - Differs from hypnosis in that the patient creates their own
- solution
- - Especially effective in children due to their ability
- to have active, creative imaginations

# Common Herbal Medications

## Peppermint oil

- Carminative- gas relieving
- Menthol- component which acts to relax smooth muscle by blocking calcium channels; most products have 44% menthol
- Also found to have mild topical anesthetic effect
- In children found to be both safe and effective.
- Dose: 0.2-0.4 ml per day
- Forms: enteric coated, peppermint oil soft gels, oil
- Randomized, double-blind, controlled 2-week trial:
- 50 children; dose- 1-2, 187mg peppermint oil 3X/day for 2 weeks
- 76% receiving enteric coated peppermint oil caps with decrease Sx
- 19% decrease in placebo group
- Kline et al. *J Pediatr* 2001;138:125-8.

## Ginger (Zingiber officinale)

- Root of ginger plant chewed to alleviate nausea- ancient times
- India- proverb saying that all good is found in ginger
- Most often used in patients with nausea, dyspepsia, motion sickness
- Prokinetic action mediated by spasmolytic activity upon Ca<sup>++</sup> channels
- Proven effectiveness in reducing postoperative nausea and emesis
- Can cause mild abdominal pain in some patients
- Dosing: 250mg to 1.0 gram; max adult dose of 5 gm per day
- Ginger is available as a dried or fresh root, tea, powder form, liquid extract, tincture, tablets, capsules, and candied form

# Additional Herbal Therapies

- Aloe Vera
- Ashwagandha-adaptogen, anxiolytic
- Boswellia(leukotriene inhibitor):
  - asthma/arthritis
- Chamomile: anxiolytic
- Licorice
- Marshmallow:
- Meadowsweet: arthritis
- Oregano: antimicrobial
- Slippery Elm
- Turmeric
- Wild Yam: previously know as “colic root”/antispasmodic

# Omega 3 Fatty Acids

- Anti-inflammatory pathway
- May have both a local and systemic effect
- Review (2006) in IBD w/ possible better outcome from enteric coated.
- Numerous studies in mental health issues
- Long term risk of GI cancer: Decrease risk with fish intake. (Again the issue of plant based diet vs low residue)
- Dose: Start at ~2 gms/day and increase to 4-6 if tolerated. Freeze caps if “burpy”.
- CAN UPSET THE GI TRACT AND MAKE THINGS WORSE IF HAVING GERD

# Probiotics

- Ecosystem of gut may differ at times of illness
- and health
- Anti-inflammatory effect of probiotics
- Barrier effect with alteration of mucus layer
- Treatment- **traveler's diarrhea and viral gastroenteritis**
- Lactobacillus and Bifidobacterium studied most often
- Forms- powder, yogurt, capsules, chewable tablets,
- freeze-dried powders, wafers and beverages.

# Probiotics

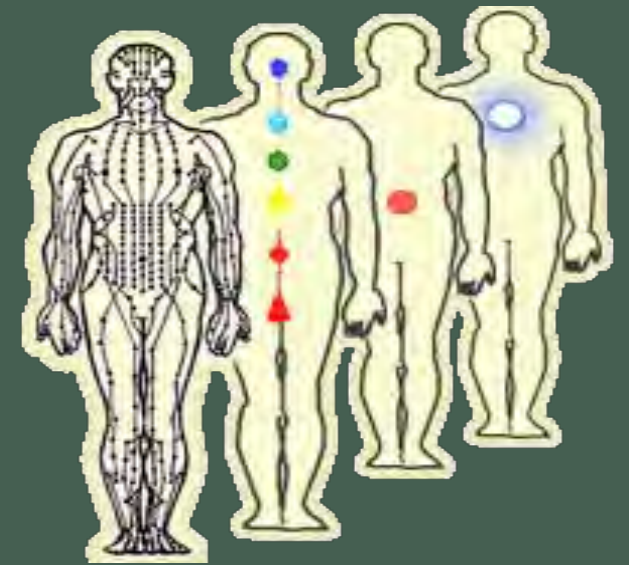
- Lactobacillus rhamonosus GG (LGG)
- Randomized, double-blind,, placebo-controlled
- trial receiving either LGG or placebo for 8 weeks; 141children
- Outcome: overall pain at end of intervention period
  
- LGG- significant reduction of frequency and severity of abd pain
- $p < .02$  and  $.001$  respectively
- Week 12: treatment success: 48 children LGG vs. 37 placebo
- $p < .03$                   Francavilla et al. *Pediatrics*. 2010;126:e1445-e1452.

# Whole System

- Homeopathy- like cures like
  - Small doses of a compound that would give similar symptoms at higher doses is given (sometimes compared to vaccine)
  - No good data in IBD but minimal risk.
- TCM
  - Primarily acupuncture (and its components) and herbal regimens along with certain exercises (Tai Chi, Qi Gong). Improving the chi.
  - Increasing evidence of acupuncture helping with abd pain.
  - Intestines are a very major organ system in TCM that is viewed to interact closely with other systems
  - There are needle-less forms for children.
  - Careful of contaminants in herbal preps.
- Ayurvedic
  - Excellent system with a very holistic approach.

# Energy Medicine

- Working with energy fields and chakras to help in overall wellness.
- Some spiritual healing falls in this category (IE shamanic healing)
- I have used more for acute pain/anxiety but can be used for long term wellness.
- Sometimes a difficult concept until one experiences it.
- Reiki, healing touch etc







# MANUAL MEDICINE

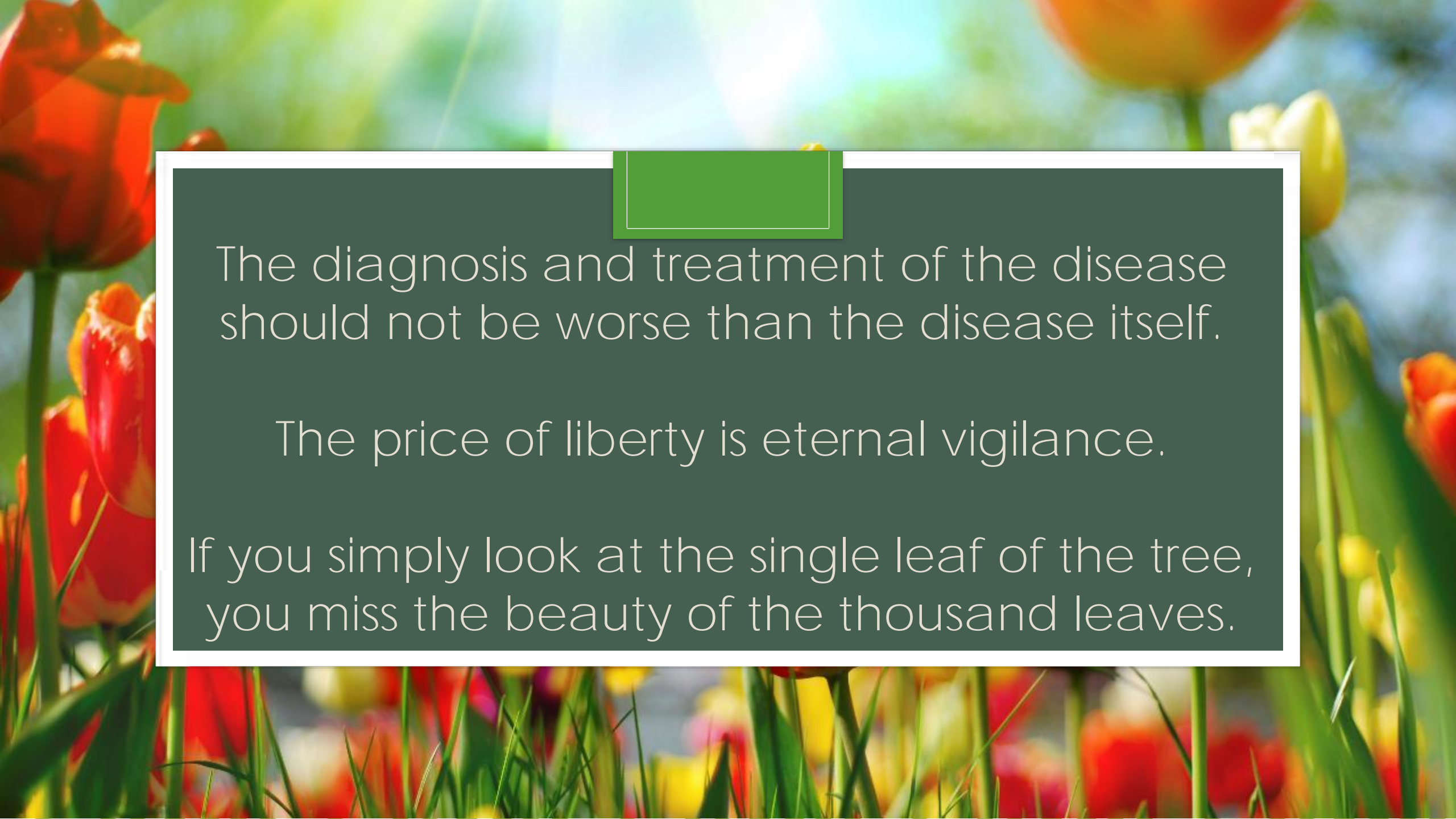
- Osteopathy
- Chiropractic
  - PT
- Massage
- Reflexology

Experience has shown us it can be effective in treating pain, and referred viscerosomatic responses.

- Treatment options are many
  - Breath work (Almost universal in all medical cultures but ours!)
  - Meditation
  - Yoga, Tai Chi, Qi Gong (moving meditation)
  - Exercise (not competition)
  - Counseling
  - Spirituality/Prayer
  - Energy Medicine
  - Biofeedback Ex: [Heartmath.com](http://Heartmath.com)

## Stress Reduction

Life is stressful and exponentially for patients with a chronic illness. Should recognize and not ignore this component



The diagnosis and treatment of the disease  
should not be worse than the disease itself.

The price of liberty is eternal vigilance.

If you simply look at the single leaf of the tree,  
you miss the beauty of the thousand leaves.

# *WELCOME to the*

## Pediatric Integrative Medicine ECHO: Changing Health Care for Children

*Session 14, March 5, 2024*

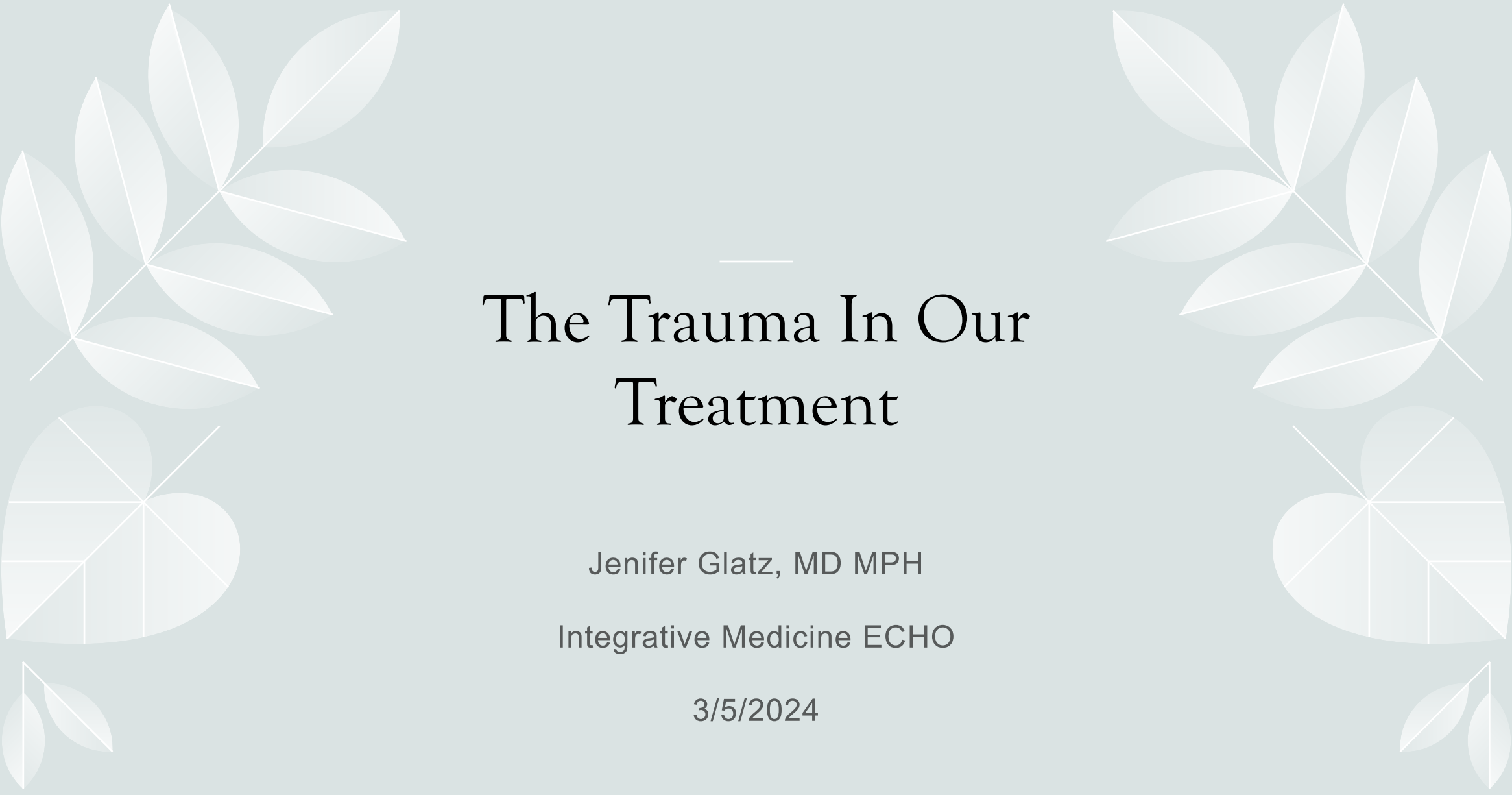
### Today's Program:

- Brief housekeeping
- Didactic: Cardiology, Jenifer Glatz
- Case Presentation: Matt Hand
- Case Discussion
- Summary
- Up Next

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# The Trauma In Our Treatment

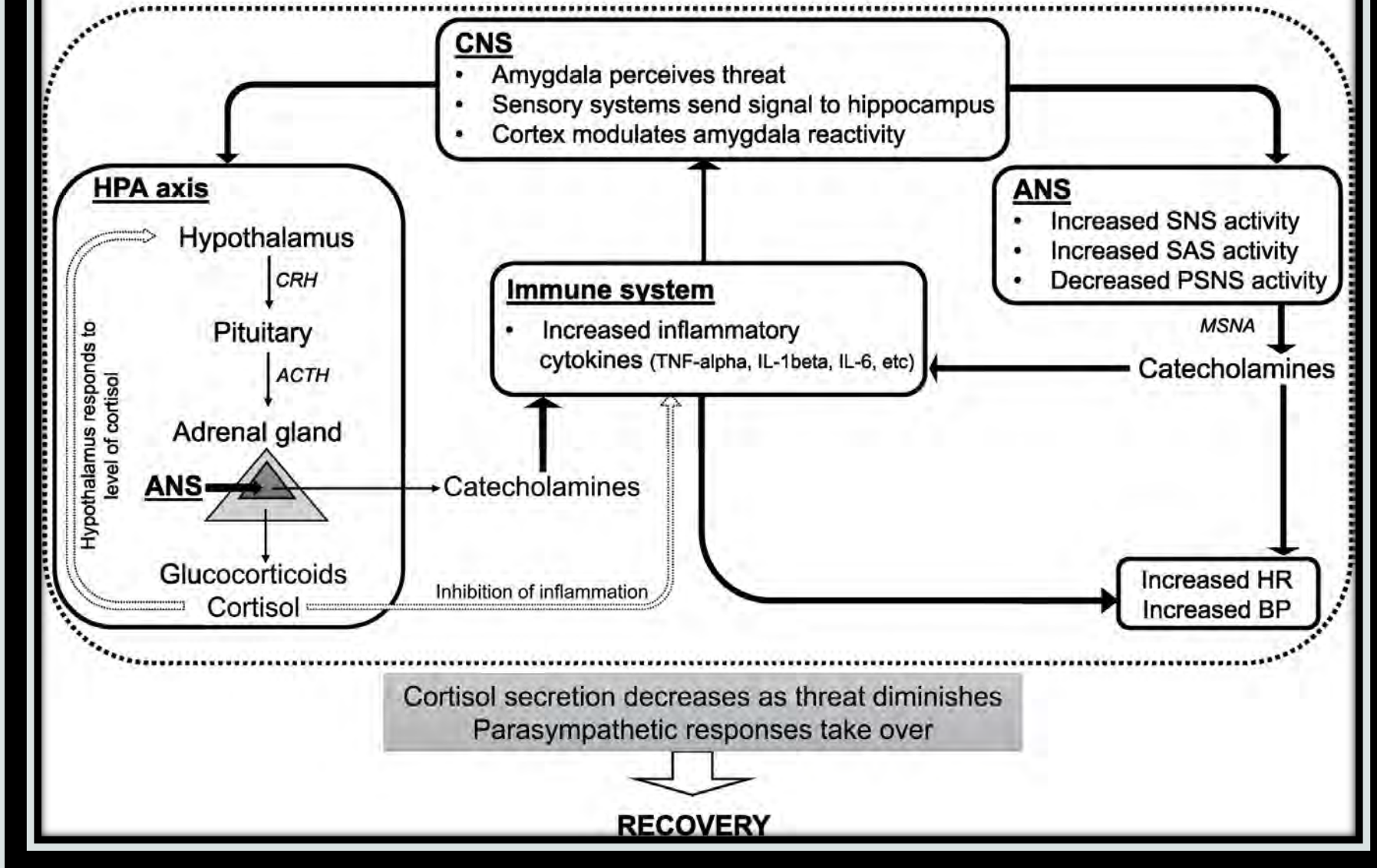
Jenifer Glatz, MD MPH

Integrative Medicine ECHO

3/5/2024

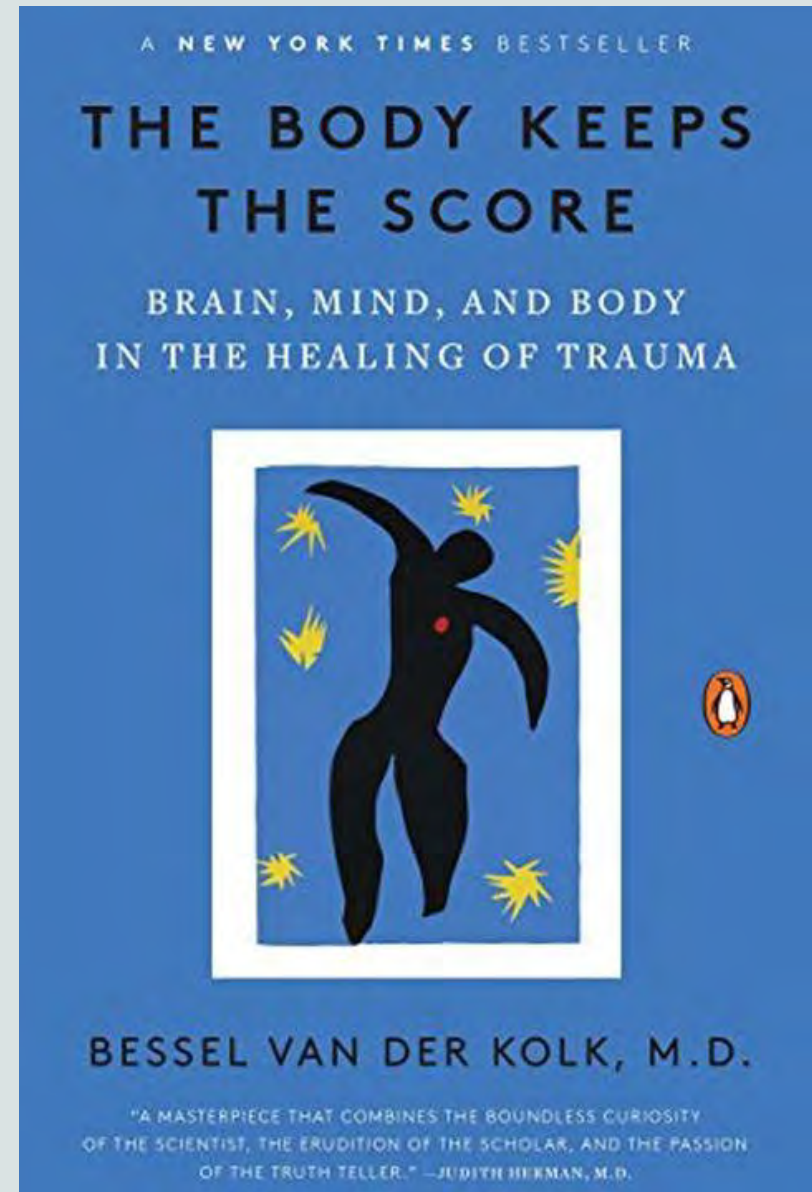


# Acute Stress Response

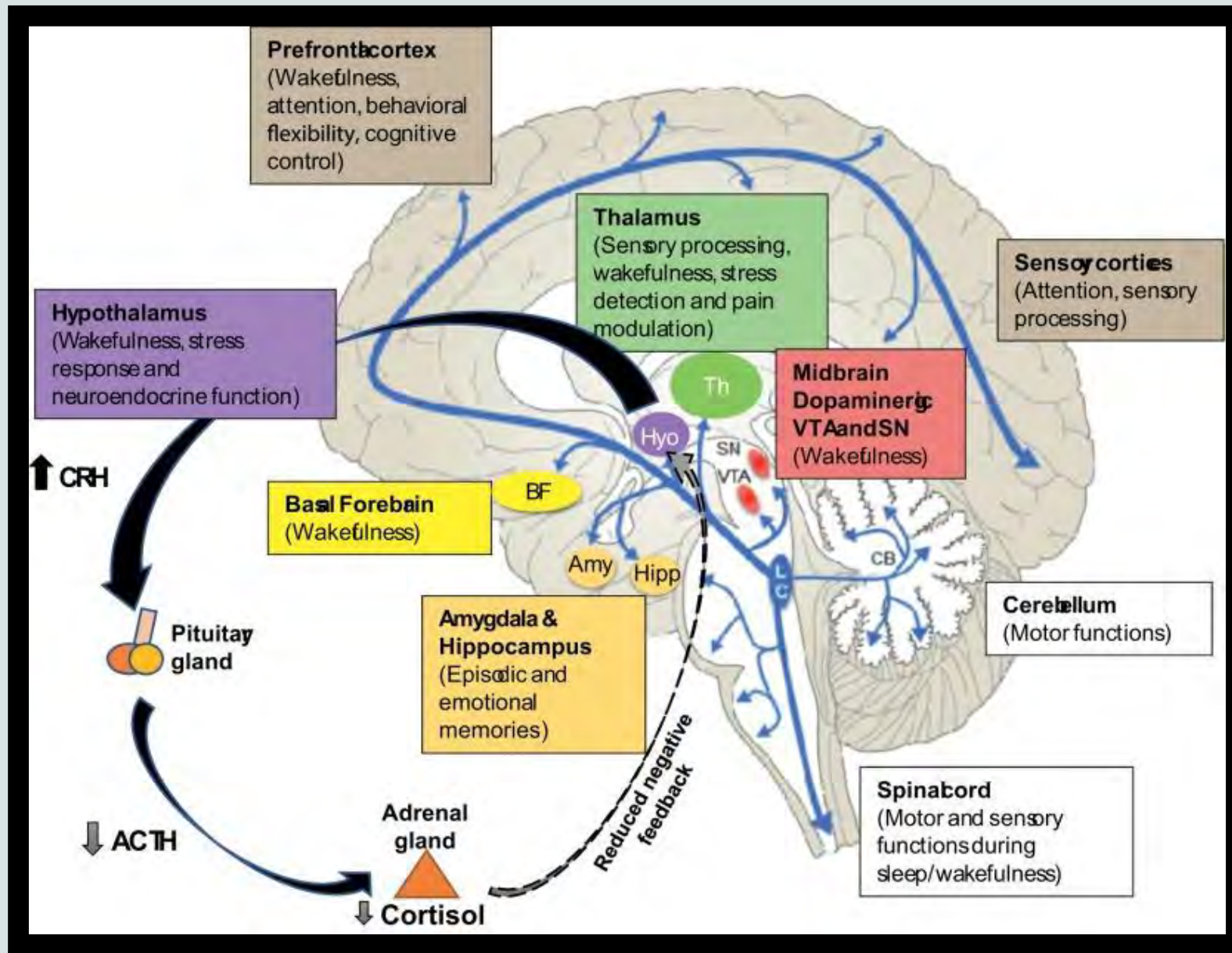


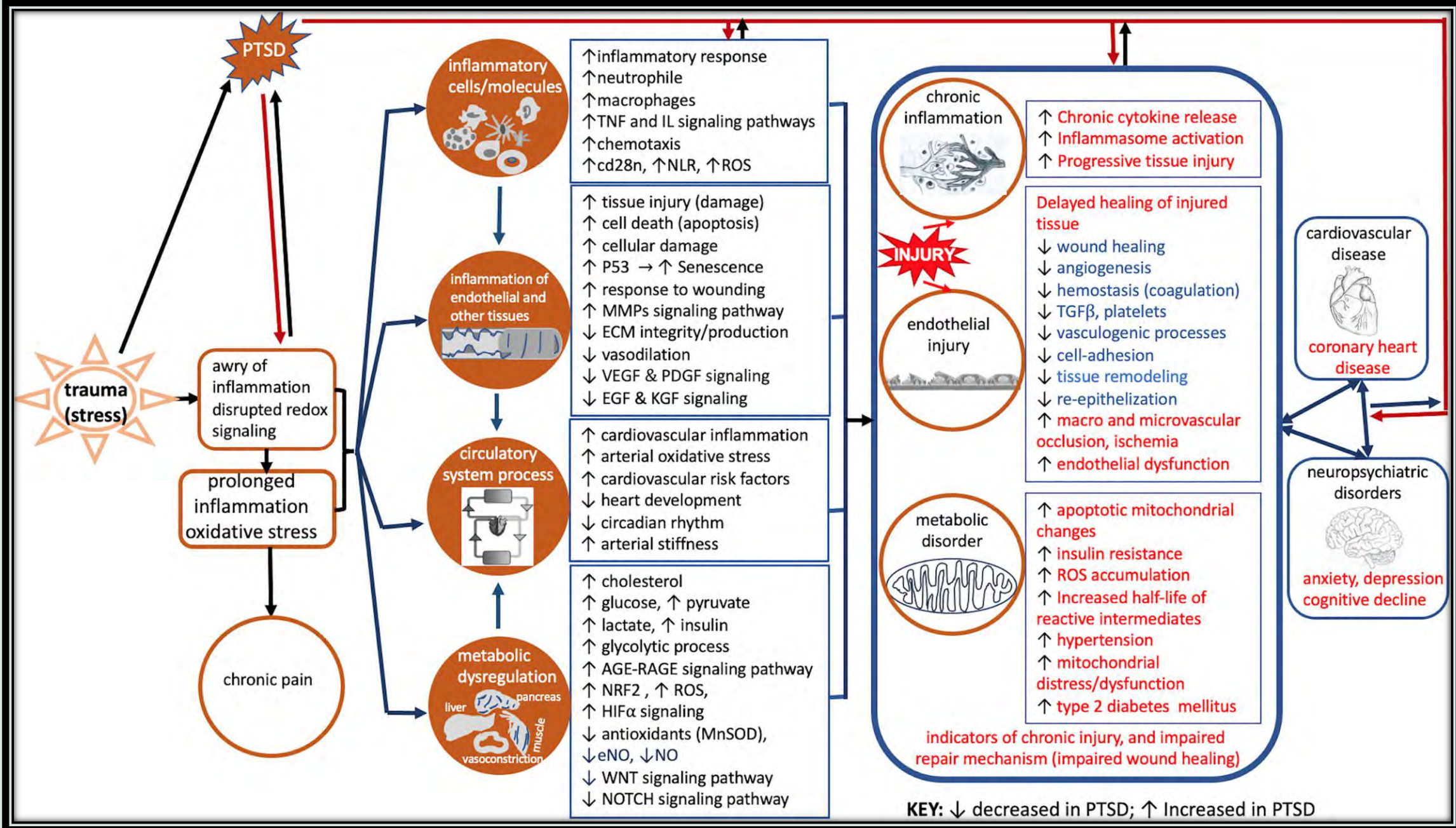
“Long after a traumatic experience is over, it may be reactivated at the slightest hint of danger and mobilize disturbed brain circuits and secrete massive amounts of stress hormones. This precipitates unpleasant emotions, intense physical sensations, and impulsive and aggressive actions. These post traumatic reactions feel incomprehensible and overwhelming.”

*The Body Keeps the Score: Brain, Mind, and Body in the Healing of Trauma.* Bessel van der Kolk









S. Muhie, et al. Molecular signatures of post-traumatic stress disorder in war-zone-exposed veteran and active-duty soldiers, Cell Reports Medicine, Volume 4, Issue 5, 2023.

# Symptoms After Trauma Exposure

## Behavioral

- Antisocial acts
- Change in activity
- Change in appetite
- Change in communication
- Change in sexual functioning
- Change in speech pattern
- Emotional outbursts
- Inability to rest
- Increased alcohol consumption
- Intensified startle reflex
- Pacing
- Social withdrawal
- Suspiciousness

## Emotional

- Agitation
- Anxiety
- Apprehension
- Denial
- Depression
- Emotional shock
- Fear
- Feeling overwhelmed
- Grief
- Guilt
- Inappropriate emotional response
- Irritability
- Loss of emotional control

## Cognitive

- Blaming
- Change in alertness
- Confusion
- Hypervigilance
- Increased or decreased awareness of surroundings
- Intrusive images
- Memory problems
- Nightmares
- Poor abstract thinking
- Poor attention
- Poor concentration
- Poor decision making
- Poor problem solving

## Physical

- Chills
- Difficulty breathing
- Dizziness
- Elevated blood pressure
- Fainting
- Fatigue
- Grinding teeth
- Headaches
- Muscle tremors
- Nausea
- Pain
- Profuse sweating
- Rapid heart rate
- Twitching
- Weakness

# Post Traumatic Stress



- Post traumatic stress is a normal adaptive response to a threatening situation or traumatic event
- Lifetime risk in adolescents is ~5%
- The physical and emotional reactions are known as post-traumatic stress symptoms and include flashbacks, bodily sensations (e.g., sweating, palpitations), avoidance of trauma-related aspects, emotional numbing, negative feelings, trouble with sleeping, anger, attention problems, hypervigilance, and others

# Post Traumatic Stress Disorder

- Some develop persistent and debilitating symptoms (PTSD)
- DSM-V lists 20 symptoms and divides them into 4 clusters:
  - Intrusion (cluster B)
  - Avoidance (cluster C)
  - Negative alterations in cognition and mood (cluster D)
  - Alterations in arousal and reactivity (cluster E)
- Must have at least one cluster B, one cluster C, two cluster D, and two cluster E symptoms for more than a month.



# Pediatric Medical Traumatic Stress

- Medical trauma is unique in that the threat is within the body and is ongoing
- Medical trauma stress has been shown to decrease physical functioning, decrease QOL, increase risk of mortality
- Factors that may contribute include uncertainty of symptom cause, lack of knowledge, unpredictability of future, and complexity of the health care system for young adults.
- Up to 80% of children experience some traumatic stress reactions a life threatening illness, injury, or painful medical procedure.
- 5-28% of children admitted to the PICU meet criteria for PTSD



# Long Term Medical Complications of PTSD

- PTSD can lead to auto-immune diseases and cardiovascular disease in adults (coronary disease risk increases 60%)
- Patients with PTSD are less likely to attend college and have increased rates of depression, suicide, substance use and anxiety
- Reactivity in PTSD is not restricted to trauma-related events but could also be detected in response to a social stimulus such as listening to a crying infant



“Trauma is not what happens to you  
but what happens inside you”

— Gabor Maté

*The Myth of Normal: Trauma, Illness and Healing in a Toxic Culture*

It is the subjective experience of a life threatening event, rather than objective factors (mechanism, type, and severity of the injury) that contribute to the development of PTSD



# PTSD and Congenital Heart Disease



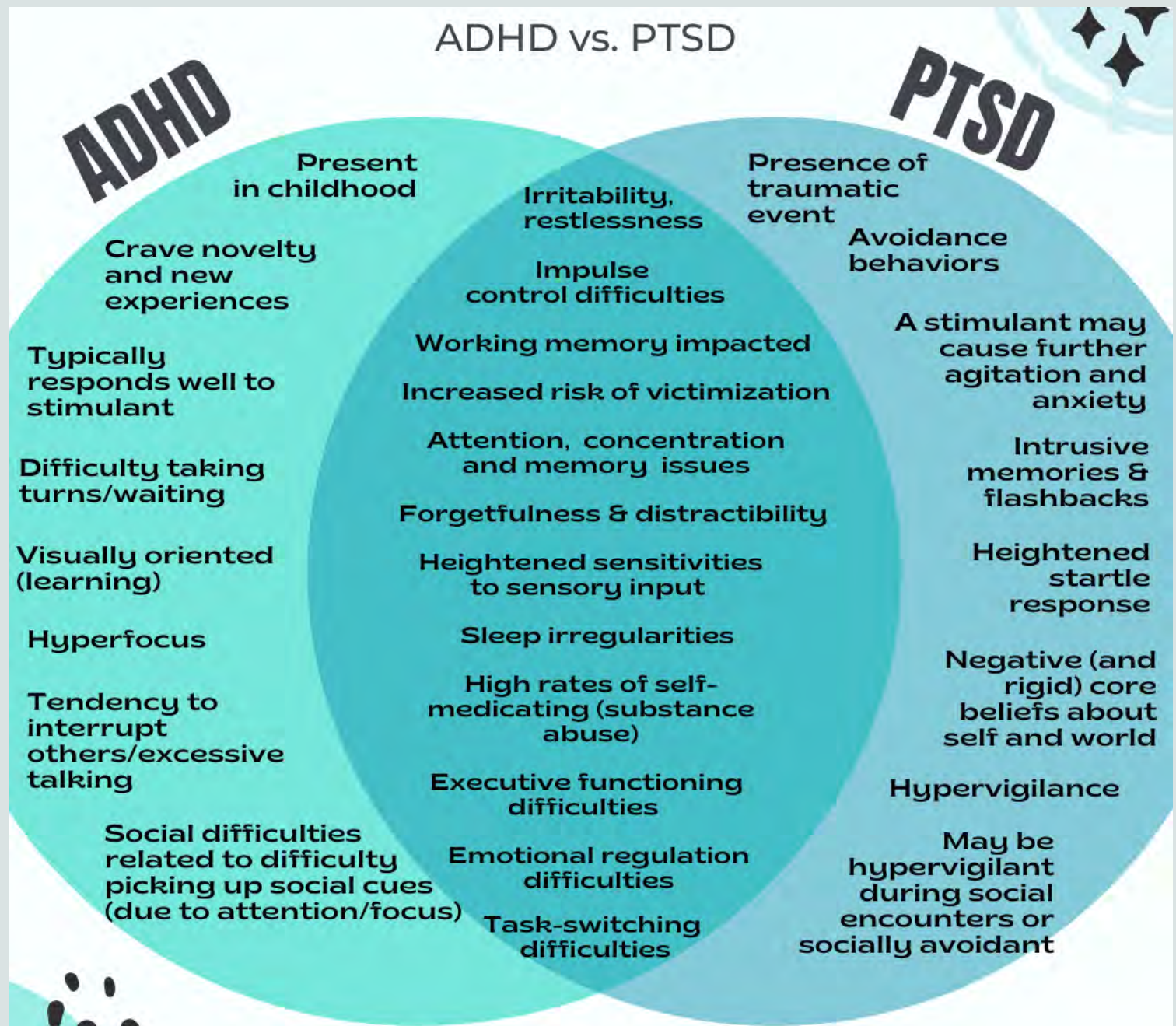
- Roughly 10-30% of children and 20% of adults with CHD have PTSS associated with their condition
- Ingles et al: 90 patients s/p ICD placement with at least 1 shock. Found ~30% met criteria for PTSD and 50% females met criteria for PTSS
- Studies are very limited in children
  - Connolly et al. : 43 children ages 5-12 years s/p cardiac surgery. At postoperative assessment 12% met diagnostic criteria for PTSD and another 12% had PTSS
  - Toren and Horesh studied PTSD in adolescents s/p cardiac surgery as newborn and 29% scored “full PTSD likely”

“Children who don’t feel safe in infancy have trouble regulating their moods and emotional responses as they grow older. By kindergarten, many disorganized infants are either aggressive or spaced out and disengaged, and they go on to develop a range of psychiatric problems. They also show more physiological stress, as expressed in heart rate, heart rate variability, stress hormone responses, and lowered immune factors. Does this kind of biological dysregulation automatically reset to normal as a child matures or is moved to a safe environment? So far as we know, it does not.”

*The Body Keeps the Score: Brain, Mind, and Body in the Healing of Trauma.*

Bessel van der Kolk

# ADHD vs. PTSD



# Predictors of Medical Traumatic Stress



- Illness onset (acute versus chronic)
- Medical complications and number of medications
- Frequency of medical visits
- Tube feeds
- Child characteristics: prior internalizing (e.g., anxiety and depression) and externalizing (e.g., aggressive behavior)
- Parental PTSS
- Trauma-related factors: elevated heart rate immediately after injury and perceived severity of the event
- Cognitive processes: dysfunctional cognitive strategies/ beliefs

# Screening for Medical Trauma

- Resting heart rate and BP and HR/BP variability
- Child Stress Disorders Checklist
- Screening Tool for Early Predictors of PTSD (STEPP)
- Diagnostic Interview Schedule for Children (DISC)
- University of California at Los Angeles Post-Traumatic Stress Disorder Reaction Index (UCLA PTSD-RI)
- Impact of Event Scale-Revised (IES-R)
- Resources available through the National Child Traumatic Stress Network

# Approach to Physical Symptoms of Trauma

- Reassurance/emotional support
- Education
- Avoid additional stressors and stimulants
- Early screening
- Trauma informed care
- Medication: +/- beta blocker
- No study has evaluated an evidence-based treatment for PTSD in children with congenital heart disease





“After trauma the world is experienced with a different nervous system. The survivor’s energy now becomes focused on suppressing inner chaos, at the expense of spontaneous involvement in their lives. These attempts to maintain control over unbearable physiological reactions can result in a whole range of physical symptoms. This explains why it is critical for trauma treatment to engage the entire organism, body, mind, and brain.”

*The Body Keeps the Score: Brain, Mind, and Body in the Healing of Trauma.* Bessel van der Kolk

# Integrative Approaches for Medical Trauma

- Breathing/grounding techniques
- Trauma focused cognitive behavioral therapy
- Neurofeedback
- EMDR
- Acupuncture
- Yoga
- Theatre
- Fostering safe relationships
- Mindfulness
- Address parental symptoms of trauma





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# *WELCOME to the*

## Pediatric Integrative Medicine ECHO: Changing Health Care for Children

*Session 15, March 21, 2024*

### Today's Program:

- Brief housekeeping
- Didactic: Neurology, Gail Schuman
- Case Presentation: Erik
- Case Discussion **using Slido**
- Summary
- Up Next

\*Please note we are adding 2 make up sessions in May (*these will not have CME associated with them*)

### Notes:

- Enter name, organization into chat
- Raise virtual hand or enter comments in chat at any time. We will call on you when it works. Please mute otherwise.
- To protect individual privacy, please use non-identifying information when discussing cases.
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# *Neurology*

*Gail Schuman, DO, MS*

*Session 15, March 21, 2024*

# Introduction - Types of Headaches

- ▶ Primary -
  - ▶ Migraine, Tension-Type, Cluster, Exertional headache
- ▶ Secondary
  - ▶ Trauma, vascular, substance abuse or withdrawal, infection, problems in cranial or facial structures, psychiatric, CNS tumor
- ▶ Neuralgias
  - ▶ Cranial/Facial/Trigeminal

Maria, p. 541

# Introduction

## ▶ Common disorder of childhood

- ▶ up to 10 yrs: 5% Boys and Girls
- ▶ 10 - 15 yrs: 5% Boys and 7% Girls
- ▶ 15 - 20 yrs: 6% Boys and 10% Girls Szperka, p. 8

▶ Mean age of onset: 5 yrs for boys, 12 - 13 yrs for girls

▶ Boy:girl ratio changes in adolescence

▶ Nearly 60% of boys and 75% of girls age 12-17 report at least one headache in the last month

Hershey, Ed, p. 34

▶ Between 8 - 23% of children between 11 - 18 yo experience migraines

B. Catton, Pharmacy Times, Aug 19, 2016

# Introduction - Clinical Differential

<b>Episodic</b>	<b>Recent Onset, Persistent, Progressive</b>	<b>Chronic, Non- Worsening</b>
<b>Migraine AVM (rare) Cluster (rare)</b>	<b>Infectious Illness Postconcussion Cervical Sprain Brain Tumor with elevated ICP (less common)</b>	<b>Tension Type Medication Overuse Headache (MOH) Chronic Medical Illness (including sleep disturbances)</b>

There is something  
wrong!

# Introduction - Features of Headaches

<b>Migraine</b>	<b>Infectious</b>	<b>Tumor/ Pseudotumor</b>	<b>Sinusitis</b>	<b>Tension MOH</b>
<b>Nausea Vomiting Photophobia Transient neurological symptoms Phonophobia Worse with activity Severe  <i>Osmophobia</i></b>	<b>Fever Malaise Rash Fatigue</b>	<b>Persistent Focal Neurologic signs or papilledema</b>	<b>Nasal discharge Fever Hx of allergies, many upper airway infections</b>	<b>No additional symptoms usually, shoulder tightness, Milder</b>

# Introduction - What do kids get?

- ▶ Multiple headache types are common in children
  - ▶ Tension-type headache (10 - 24% of children & adolescents, but usually milder with little impairment)
  - ▶ Migraine and variants (8 - 23%) - recurrent, moderate to severe headaches
  - ▶ Due to medical condition (illness, infection)
  - ▶ Medication-overuse headaches
  - ▶ Concussion, neck sprain, post-concussive syndrome
  - ▶ Trigeminal Autonomic Cephalgias -cluster, paroxysmal hemicrania, short-lasting neuralgiform headache attacks (SUNHA) - rarely seen
  - ▶ Primary Stabbing Headaches - scary but occur with other primary headaches such as migraine



# Important Questions to Ask

## Other questions

- ▶ Where does it hurt on your head?
- ▶ What does it feel like - hammering, exploding or squeezing?
- ▶ Does the headache prevent you from participating in your activities?
- ▶ Are they missing school because of headaches?
- ▶ Does the headache wake you up from a sound sleep, or is present on awakening and improves during the day? (Increased ICP?)
- ▶ In young children, sometimes you need to infer symptoms from their behavior
- ▶ Worse with Valsalva maneuvers? (Increased ICP?)

# Diagnosis - When is Location Helpful?

## Other questions

- ▶ Where does it hurt on your head?
- ▶ What does it feel like - hammering, exploding or squeezing?
- ▶ Does the headache prevent you from participating in your activities?
- ▶ Are they missing school because of headaches?
- ▶ Does the headache wake you up from a sound sleep, or is present on awakening and improves during the day? (Increased ICP?)
- ▶ In young children, sometimes you need to infer symptoms from their behavior
- ▶ Worse with Valsalva maneuvers? (Increased ICP?)

# Diagnostic Features of Migraine

- ▶ Common Migraine - No Aura
- ▶ Classical Migraine - With Aura
  - ▶ With or without headache (acephalalgic)
  - ▶ Basilar-type
  - ▶ Familial or Sporadic Hemiplegic Migraine
- ▶ Childhood Periodic Syndromes - Precursors to Migraine
  - ▶ Recurrent Abdominal Pain (RAP)
  - ▶ Benign Paroxysmal Vertigo or Torticollis
  - ▶ Cyclic Vomiting
  - ▶ Motion Sickness?

# Features of Tension Type Headaches

- ▶ Pressure or tightness (often band-like)
- ▶ No neurological or autonomic symptoms
- ▶ Episodic or Chronic
  - ▶ Most common cause of chronic daily headache
  - ▶ Analgesic rebound (MOH) often contributes to problem
- ▶ Can be difficult to treat
  - ▶ Analgesic detoxification
  - ▶ Prophylaxis with TCAs, topiramate can be beneficial also
  - ▶ Muscle relaxants, esp tizanidine (Zanaflex) can help
  - ▶ Nonpharmacological approaches for muscle spasm - OMM, PT, cognitive-based therapy

# Migraine - Acute Treatment Options

- ▶ Acetaminophen 10 - 15 mg/kg/dose
- ▶ Ibuprofen 10 mg/kg/dose
- ▶ Naproxen 2.5 - 5 mg/kg/dose
- ▶ Ergotamine 1 - 2 mg at onset (Migranal nasal spray - I do use in teens)
- ▶ Diclofenac (Cambia) 50 mg mixed with water - I do use in teens
- ▶ Triptans
  - ▶ Axert (almotriptan) down to 12 yrs old
  - ▶ Imitrex (sumatriptan) - tabs, nasal spray, injectable
  - ▶ Maxalt (rizatriptan) down to 6 yrs old - ODT, tabs
  - ▶ Zomig (zolmitriptan) - down to 12 yrs old, nasal spray, ODT
  - ▶ Treximet (suma + naproxen) - various strength combinations - down to 12 yrs old
- ▶ Frequency of use is limited for all of these

Abu-Arafeh, Ed., p. 110  
Newman, p. 20, Szperka, p11

# Triptan Approvals & Dosing Table

TABLE 3. ACUTE MIGRAINE TREATMENT GOALS				
Generic	Brand	Pediatric Dose	Age (yr)	Maximum Daily Dose (mg)
Sumatriptan <sup>20</sup>	Imitrex <sup>2</sup>	Nasal: 5, 10, or 20 mg	12-17	40 mg
Rizatriptan <sup>16</sup>	Maxalt, Maxalt MLT	5 mg (if <40 kg) or 10 mg (if ≥40 kg)	6-17	30 mg <sup>d</sup>
Zolmitriptan <sup>26</sup>	Zomig	Nasal: 2.5 or 5 mg	12-17	10 mg
Almotriptan <sup>27</sup>	Axert	6.25-12.5 mg	12-17	25 mg
Sumatriptan/ naproxen sodium <sup>11</sup>	Treximet	Oral: 10/60, 30/180, 85/500 mg	12-17	85/500 mg

<sup>d</sup>Tablets are not recommended in pediatric patients due to a lack of safety and efficacy data.

<sup>e</sup>Approved only for adults; if patients take concurrent propranolol, the maximum daily dose is 5-mg oral disintegrating tablet.

Drug	Dose	Maximum Daily Dose
Propranolol	2-4 mg/kg/day, or 10-40 mg 3 times a day	4 mg/kg/day, or 120 mg
Cyproheptadine	0.25-1.5 mg/kg 3 times a day	24 mg
Valproic acid	20-40 mg/kg/day	1000 mg
Topiramate	1-10 mg/kg/day	200 mg
Amitriptyline	10-50 mg at bedtime	50 mg

# Preventive Treatment of Migraines

- ▶ *Cyproheptadine 0.25 - 1.5 mg/day (prepubertal)*
- ▶ *Topiramate 1 - 10 mg/kg/day div BID (50mg BID)*
- ▶ Valproic Acid 20 - 40 mg/kg/day div BID - not in females
- ▶ Lamictal - 100 mg QHS or BID, particularly with aura
- ▶ Levetiracetam - 500 - 1000 mg per day
- ▶ Neurontin 10 - 40 mg/kg/day
- ▶ *Amitriptyline 10 - 25 mg QHS (teens, give at night, helps sleep)*
- ▶ *Nortriptyline 10 - 75 mg QHS*
- ▶ *Naproxen Sodium 250 - 500 mg BID (GI issues)*
- ▶ Verapamil 4 - 10 mg/kg/day div TID (FHM)
- ▶ *Propranolol 2 - 4 mg/kg/day (not in asthmatics)*
- ▶ Butterbur 50 - 75 mg BID (Class A evidence, liver toxicity, must be certified PA free) - lots of **OTC Combo products have this and can't tell if PA free** - Avoid combo products in general

Abu-Arafeh, Ed., p. 116-117  
David, Ed. , p. 545

# Pearls - This is where I start

- ▶ Take treatment medication early in the headache - even triptans
- ▶ Take the appropriate dose
- ▶ Wean all caffeine, save as treatment
- ▶ Plenty of fluids - minimum of 2 liters/day, no high sugar, no caffeine, no fake sugars
- ▶ Good sleep hygiene - regular bed-time, regular rising time, 8 - 10 hours, no TV, nightlights, cell phone or computer in bedroom (I hear you **laughing!**). **No screen time for one hour before bed (now you're rolling on the floor!)**
- ▶ MVI, Magnesium, Riboflavin, Co-Q-10, Migrelief (Magnesium, Riboflavin, feverfew), Be wary of combo products
- ▶ Regular meals - no skipping breakfast, protein source at breakfast (good luck in teenagers!)



# Pearls - How to help us out

- ▶ Labs: Fasting - CBC, Fe, Ferritin, Thyroid, Magnesium, CMP
- ▶ Have the patient keep a headache diary before coming to see neurology
  - ▶ Date and Time of onset
  - ▶ Duration and any treatment used with dose
  - ▶ Type - pounding, squeezing
  - ▶ Location
  - ▶ Associated features - N/V, photophobia, phonophobia, vision changes, dizziness, etc.
  - ▶ Trigger info - how much sleep the night before, new food?, school stressors, other stressors

# Red Flags in General

- ▶ Positional or Valsalva related
- ▶ Late-age onset headache (> 50 yrs old)
- ▶ Very young children with headaches (<6 yo)
- ▶ Maximum severity at onset of headache
- ▶ Fever with the headache
- ▶ Compromised immune system
- ▶ Scalp tenderness (not allodynia, ?trauma)
- ▶ Abnormal neurologic exam

# Imaging is Necessary When...

- ▶ Subacute Headache with rapid progression in severity, Change in type of headache
- ▶ Atypical presentation - waking from sleep, intractable vomiting, vertigo, confusion, mental status changes
- ▶ New onset headache in immunosuppressed patient
- ▶ Child under 6 years of age
- ▶ First and/or worst headache - especially very young patients without typical features of migraine
- ▶ Any associated systemic features - fever, meningismus, etc.
- ▶ Headache with focal abnormalities on exam
- ▶ Occipital or Posterior Location
- ▶ No family history of migraine/primary headaches



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# *WELCOME to the*

## Pediatric Integrative Medicine ECHO: Changing Health Care for Children

*Session 16, April 2, 2024*

### Today's Program:

- Brief housekeeping
- Didactic: Rheumatology, Jill Ryan
- Case Presentation: Matt Hand
- Discussion
- Summary
- Up Next

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# Pediatric Rheumatologic Disease

Jill Ryan PA-C

- Musculoskeletal complaints are second only to headache in school age children.
- Important for providers to understand when and how to pursue further evaluation of acute and chronic MSK complaints in pediatric patient.

# Common Rheumatologic causes of musculoskeletal pain in children

- Juvenile Idiopathic Arthritis
- Fibromyalgia Syndrome
- Hypermobility Spectrum disorder and hypermobile Ehlers-Danlos
- SLE
- Dermatomyositis



# Differential diagnosis of musculoskeletal complaints in children

## **Infection**

Viral – Parvo, Rubella, Mumps

Bacterial – Septic Arthritis, Lyme Disease, Acute Rheumatic Fever

Reactive – Post-streptococcal, enteric infections

## **Connective Tissues Diseases**

JIA      SLE      Sjogren's Syndrome      Scleroderma

Dermatomyositis      Systemic Vasculitis (Kawasaki, HSP)

## **Mechanical and Orthopedic**

Slipped Femoral-Epiphysis      Osgood-Schlatter's Disease

Benign Joint Hypermobility/EDS      Legg-Calve Perthe's disease

## **Systemic Diseases**

Hemophilia      Endocrine Disorders      Lipid Storage Diseases Malignancy

# Consequences of Musculoskeletal Disease

1. Missed school, academic challenges
2. Decreased physical activity, limitations
3. Generalized growth delay
4. Localized Growth Abnormalities  
(Limb length/size, Micrognathia, scoliosis)
5. Delayed puberty
6. Sleep cycle disruption

# Juvenile Idiopathic (Rheumatoid) Arthritis “JIA/JRA”

- Most Common Connective Tissue/Autoimmune disease of childhood
- Incidence = 1 in 10,000 children annually. One of the most common chronic diseases of childhood.
- Prevalence = 1 in 1,000 children.
- Definition: A chronic arthritis persisting in one or more joint for > 6 weeks in patient under 16 years old
- Kids with JIA rarely have a specific chief complaint of joint pain.
- Other etiologies ruled out

# Oligo (Pauci)-articular JIA

- Most common sub group of JIA
- F>M, Often presents age 2-5 y.o in girls and 11-16 y.o. boys
- 4 or less joints involved, most commonly knee, wrist or ankle.
- ANA + (low titer, younger age of onset)
- At risk for asymptomatic Uveitis.
- **50-60% will “outgrow” the arthritis. Small chance of relapse in adulthood. Remaining 40% transform to adult RA.**

# Polyarticular JIA

- F>M
- Small and large joint with tenosynovitis
- Symmetric, 5 or more joints involved.
- RF+
- Erosive disease more common.
- Uveitis less common, screening still needed.

# Systemic JIA

- F=M.
- Sick kids with fever and rash. Painful, stiff and swollen joints,
- Lymphadenopathy
- Hematologic findings including anemia, leukocytosis and thrombocytosis,
- Elevated inflammatory markers, elevated Ferritin
- RF + (suggests more aggressive pattern of disease)

## Laboratory Values in JIA

- WBC: normal to 50K
- Hgb: 8-22gm
- Plt: normal to very elevated
- ESR: normal to elevated
- CRP: normal to elevated.
- ANA: 30-40% positive, in Oligo articular
- RF: 10-15% positive, Poly articular
- ASO, Parvo titers to rule out infectious etiology.
- Synovial joint fluid analysis - inflammatory cell count.

## Treatment of JIA

1. NSAIDs (30% response in Oligo articular)
2. DMARDs -Hydroxychloroquine, Methotrexate, Sulfasalazine
3. Corticosteroids, oral and intraarticular
4. Biologics
5. Complementary therapies (acupuncture, OM, supplements, anti inflammatory diet)

Multidisciplinary approach: Rheumatologist, Pediatrician, Ophthalmologist.

Dietician, Physical Therapist, School support services



# Hypermobility Spectrum Disorder

- Joint hypermobility seen in approx. 20% of general population.
- Of those with joint hypermobility < 10% symptomatic.
- Generalized, regional or localized joint hypermobility.
- Joint instability.
- Pain throughout day or later in day, morning stiffness is rare.
- Decreased muscle mass, decreased muscle strength, hyperalgesia
- Often seen in conjunction with POTS, IBS, Anxiety disorder, Fatigue.

## hypermobile Ehlers-Danlos Syndrome (hEDS)

- Velvety skin, striae, increased skin laxity, easy bruising, blue sclera
- Family history of 1<sup>st</sup> degree relative with hEDS seen in pts with hEDS.

# Hypermobility Spectrum Disorder/hypermobile Ehlers-Danlos Management

- Prognosis is good, joint laxity decreases with age.
- Noninflammatory, not progressive.
- This is a syndrome of daily pain that can be life altering. Supportive care is focus of therapy.
- Physical Therapy. Muldowney Protocol. Bracing and Taping.
- NSAIDs
- Nutritional supplements - Vitamin C, Vitamin D.

# THE BEIGHTON SCORE

## How to Assess Joint Hypermobility

A numerical mobility score of 0 to 9, one point allocated for the ability to perform each of the following tests:



Pull little finger back beyond 90°  
*(one point for each side)*



Bend knee backwards beyond 10°  
*(one point for each side)*



Pull thumb back to touch forearm  
*(one point for each side)*



Lie hands flat on floor while keeping knees straight and bending forward at waist



Bend elbow backwards beyond 10°  
*(one point for each side)*

A positive Beighton score for adults is 5 out of the 9 possible points; for children, a positive score is at least 6 out of 9 points.

# Fibromyalgia Syndrome

- Most common in teenage females
- Diffuse MSK pain present at least 3 months
- Fatigue
- Disrupted sleep patterns
- Multiple tender points on exam.
- No inflammatory joint findings.
- Associated chronic headaches, abdominal pain, Depression & Anxiety.

# Management of Fibromyalgia Syndrome

- Improve sleep cycle
- Exercise, physical therapy
- Management of pain with acetaminophen, NSAIDs. No indication for opioids.
- Depression and/or anxiety medication
- Acupuncture

# What is Integrative Pediatrics?

**“Integrative Medicine is the practice of medicine that reaffirms the importance of the relationship between practitioner and patient, focuses on the whole person, is informed by evidence, and makes use of all appropriate therapeutic approaches, healthcare professions and disciplines to achieve optimal health and healing”**

# Integrative Modalities for Rheumatologic and Musculoskeletal Pain

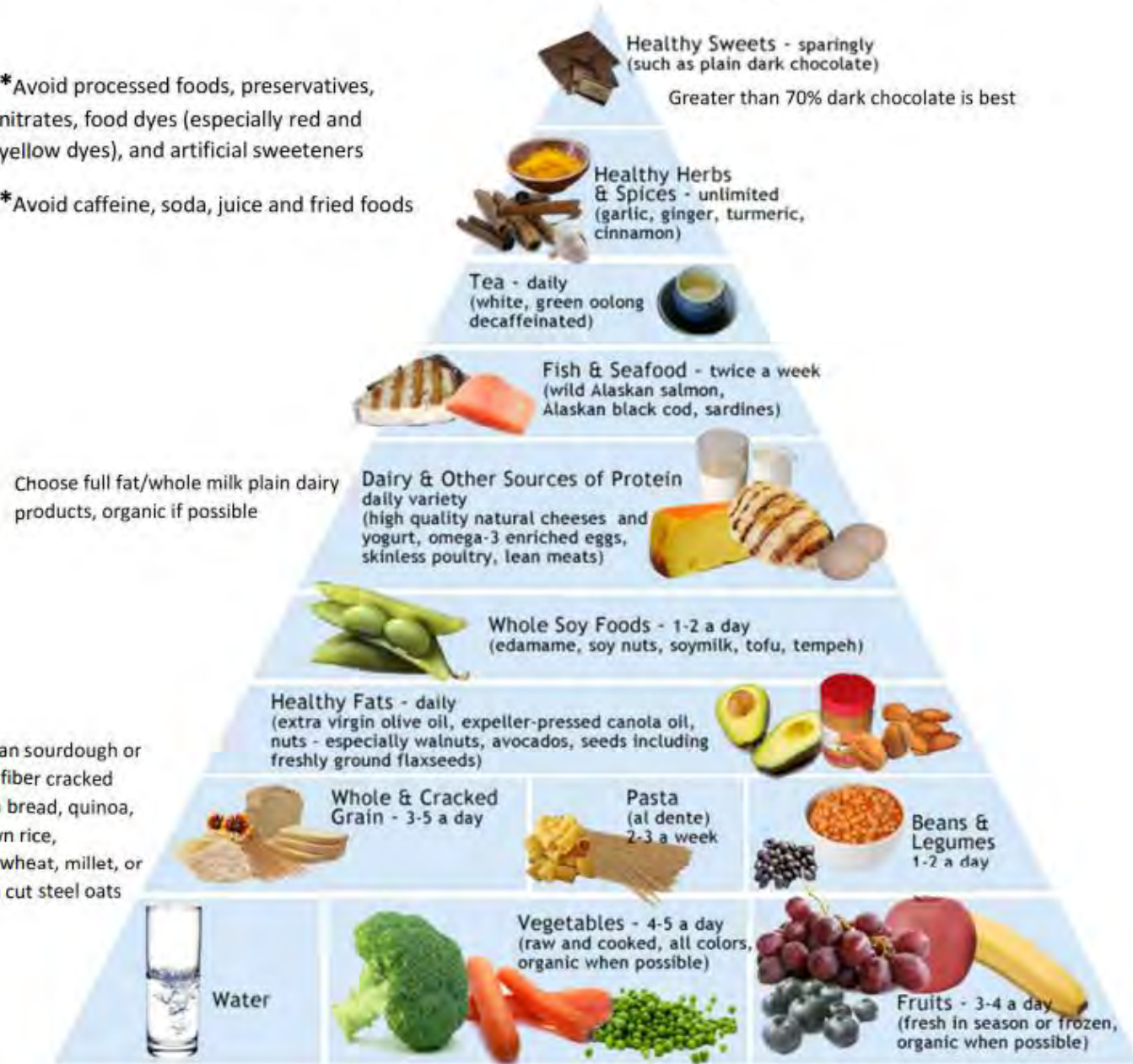
- Botanical Medicine/Supplements
- Mind Body Therapies - meditation, imagery, relaxation, biofeedback
- Osteopathic manipulation, chiropractic
- Acupuncture
- Diet/Nutrition
- Physical Therapy, Exercise
- Healing Touch, Reiki

# Pediatric Anti-Inflammatory Food Pyramid

\*Avoid processed foods, preservatives, nitrates, food dyes (especially red and yellow dyes), and artificial sweeteners

\*Avoid caffeine, soda, juice and fried foods

Artisan sourdough or high fiber cracked grain bread, quinoa, brown rice, buckwheat, millet, or plain cut steel oats





# Use of Integrative Modalities in Pediatric Rheumatology

- CAM use in young children in general pediatric clinics is estimated to be 11-21%, and 60 to 80% in children with chronic disease. In one study 2/3 of Pedi Rheum patients used 1 form of complementary medicine while ½ of the pts used 2 or more modalities.
- Integrative modalities allows patient and parent to feel back in control of at least **some aspect their child's chronic illness.**
- Provide an opportunity to improve quality of life in pediatric rheumatology patients.
- Avoid or minimize exposure to potential side effects (immunosuppression, malignancy).
- Management of pain from Rheumatologic disease
- Continued research in pediatric population is needed.

## **2022 American College of Rheumatology (ACR) Guideline for Exercise, Rehabilitation, Diet, and Additional Integrative Interventions for Rheumatoid Arthritis**

### **Guideline Summary**

Revised January 13, 2023

This American College of Rheumatology (ACR) guideline addresses the use of exercise, rehabilitation, diet, and additional integrative interventions in conjunction with disease-modifying anti-rheumatic drugs (DMARDs) as part of an integrative management approach for people with rheumatoid arthritis (RA).

## References:

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